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FORMERLY

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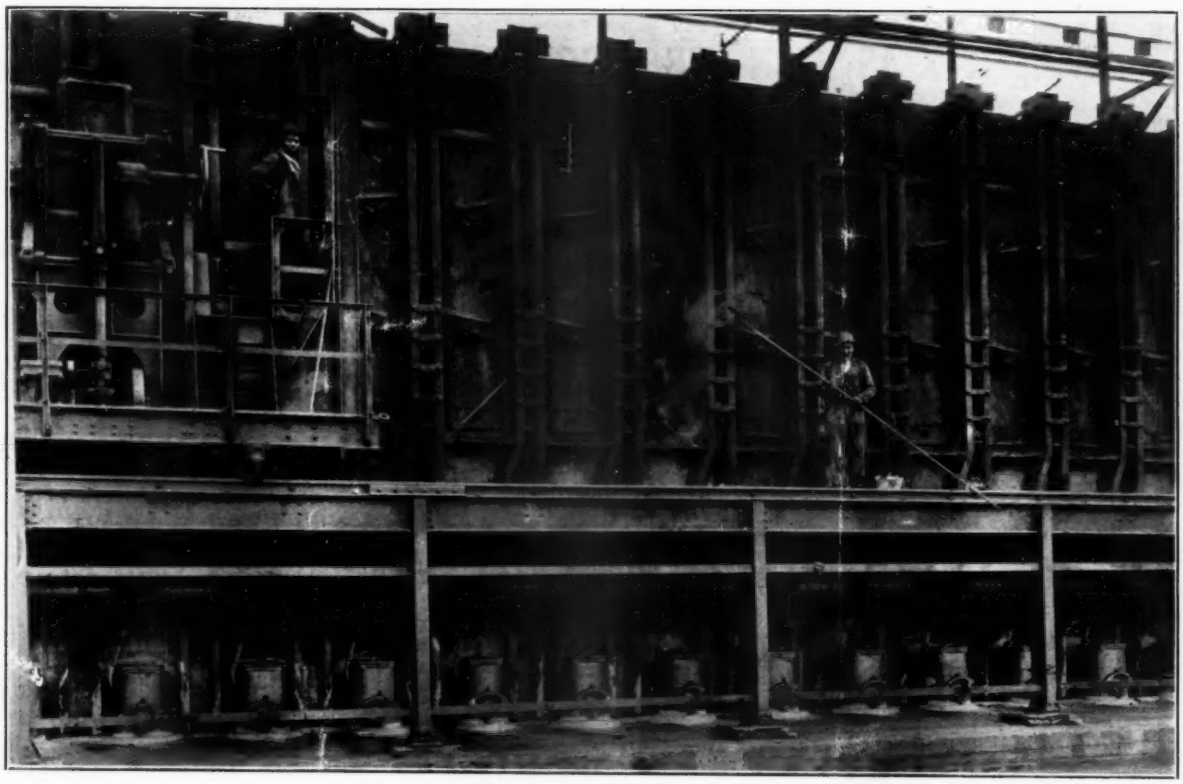

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Builders of By-Product Coke and Gas Plants

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ADVERTISERS' INDEX, PAGE 18

MANAGERS OF SMALL GAS WORKS

should look into the question of installing

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They are built as small as 175,000 cu. ft. per day.
The Investment Cost is low and there is obtained:

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Resulting in high yield of standard B. T. U. gas.

THE UNITED GAS IMPROVEMENT CO., Philadelphia,

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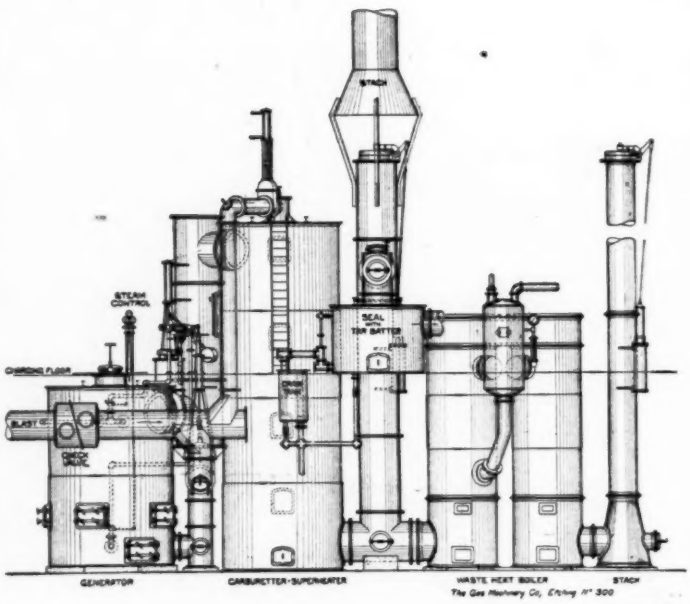

Carburetted Water Gas Apparatus

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Advantages:

Smaller Ground Area
Less Radiating Surface
Reduced Back Pressure in Machine
Increased Efficiency

The Gas Machinery Co.
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AMERICAN
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Vol. CVI, No. 10 NEW YORK, MARCH 3, 1917 Whole No. 3078

Influencing Suburban Communities to Adopt Gas for Street Lighting by Dwelling Upon Its Convenience for Domestic Purposes

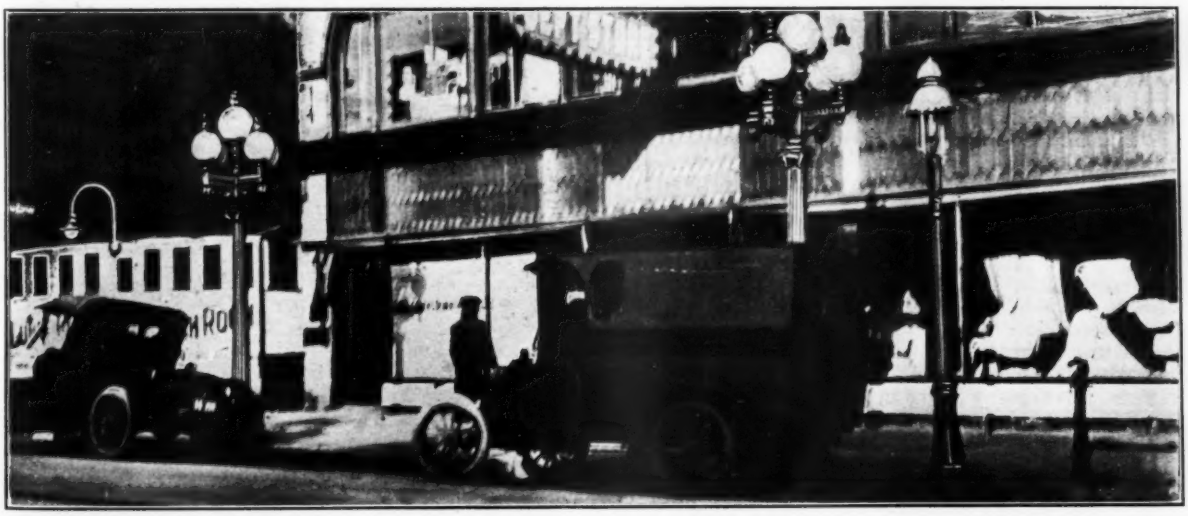
Has Been Demonstrated that Such Business Can Be Obtained Even When Cost Per Candle Power Hour Exceeds That of Electricity—Indirect Advantages of Lighting and Extinguishing by Hand

In the past it has been the custom to allow electric light companies to develop suburban communities first. This naturally means that such companies establish themselves in the street lighting business before the gas company comes in, a factor that of course gives them a great advantage in this business, but, that even with this handicap, the gas company can secure the street lighting is being demonstrated emphatically by companies which are active in developing rapidly growing suburban communities. In fact very strong pressure can be brought to bear to persuade the people of these communities to give the lighting contracts to the gas company.

Not very long ago there was a fight between a suburban gas company and a suburban electric company for a street lighting contract that was about to be renewed. When it came down to the final bids it was discovered that the cost of gas per candle power hour was slightly in excess of the cost of electricity per candle power hour. The people of this district, however, voted in favor of gas lighting.

They did this for two reasons: First, the gas man believed so thoroughly in his proposition and the service that he would render that he convinced them that gas lighting was superior to electric lighting.

He showed them that since it was necessary to send a man to each lamp to light it at night and to extinguish it in the morning all the lamps would have two inspections per day which would result in fewer unlighted lamps and in better lighting than would be the case if



THREE TYPES OF OUTDOOR GAS LIGHTING ON A BUSINESS STREET—REGULAR STREET LAMP, ORNAMENTAL FIVE-LIGHT STANDARD AND INVERTED GAS ARC

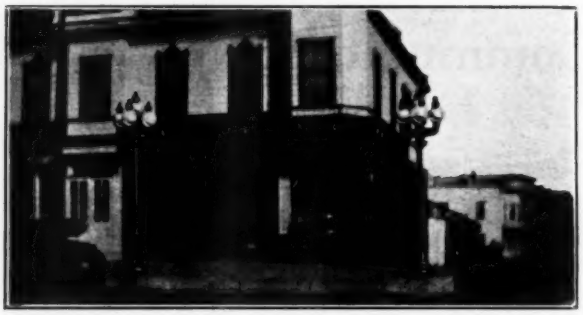
they were given only a casual inspection once in twenty-four hours or once a week.

In addition the glare of the gas lamps would not be so great as that of the electric lamps. The gas lamps would be placed nearer the ground, would light the roadway more uniformly and it would be safer and easier to drive an automobile along a country road lighted by gas than it would along a road lighted by electricity.

Street Lighting to Obtain Gas for Domestic Purposes

Second, and this probably was the deciding feature—he dwelt strongly upon the great convenience gas is in the home; especially in the home that is often occupied for week ends only,

With gas the results are sure and quick. Rooms can be heated, food cooked and water heated in the shortest



ORNAMENTAL GAS LIGHTING IN FRONT OF A GAS OFFICE

possible space of time. When the family leaves and the house is closed there is no necessity to wait for fires to go out or to leave the house with a fire still burning in the stove or furnace. All that is necessary is to turn off the gas.

Those people who would need such a service most were located on the roads where street lights would be necessary, but so far away from the present mains that the investment required to lay the mains to their homes would be prohibitive unless the gas consumption could be increased by also supplying street lighting.

In other words the only way in which a great many of these people could enjoy the advantages of gas would be by voting for gas street lighting.

They accordingly did so and are now pleased with their street lighting, are enjoying the advantages of a gas supply and every one is happy. Incidentally the gas company is making money and has its mains laid in a district that during the next decade will show a very rapid growth.

Street Lighting as a Wedge to Get Into New Territory

Another method of securing gas street lighting that is proving very satisfactory to the gas companies using high pressure distribution is the organizing of new lighting districts where street lighting has never been done and where neither gas nor electric service exists.

The gas company in securing this lighting can use the same arguments that have been enumerated above and usually has a great advantage over the electric lighting company because when it comes down to a question of cooking with gas or lighting with electricity the average householder will decide in favor of cooking with gas.

There are country roads in the suburbs of New York City that are lighted with gas though some sections may not have a house for a mile, and there is no electricity. The gas company that is doing this lighting has used street lighting as an opening wedge to get into the district first. As a result it will be able to build up a very profitable load before the electric light company enters the field at all.

This demonstrates that gas lighting is not nearly as much a thing of the past as many would have us believe. When it is possible to secure street lighting contracts in competition with the new electric illuminants and at a price that is at least equal to the cost of electric lighting it is evident that gas lighting still possesses marked selling features.

Lighting and Extinguishing by Clockwork Attachment

Though it appears better practice to light and extinguish gas street lights by hand in order to make sure that they are properly inspected there are cases where the lamps must be placed long distances apart. In such cases the expense of lighting and extinguishing them by hand may prove prohibitive. This, however, does not mean that the idea of gas street lighting under such conditions must be abandoned. The gas supply may be piped directly from the high pressure main already laid in the road, and reduced to the working pressure of the burner through the medium of a small governor placed just below this burner. A pilot light is provided for lighting the gas when it is turned on and a clock attachment used for turning it on and off. Although this may not give service quite as satisfactory as that where the lamps are lighted and extinguished by hand it makes it

GAS STREET LAMP EQUIPPED WITH GAS GOVERNOR AND CLOCK CONTROL FOR LIGHTING AND EXTINGUISHING

A MILE OF COUNTRY ROAD WITH NO HOUSES BUT WITH GAS STREET LIGHTING

possible to use gas street lighting wherever there is a gas supply even though only one lamp located way out in the country is required. These lamps can be easily patrolled by a man on a motorcycle or in an automobile.

Ornamental Gas Lighting

A form of street lighting that has proved very successful with electricity, but which up to date has not been used to as great an extent as it should with gas is ornamental gas lighting.

It has been proven, however, that if the gas company will make a proposition as attractive as the electric light company makes, it is as easy to sell ornamental gas lighting as it is to sell ornamental electric lighting. As a matter of fact the average citizen does not know the difference between the two systems when he sees them in operation.

The gas company, however, must do its part to secure this lighting. It cannot expect the business men to come to it. When a price is fixed at a certain sum per month to cover the cost of gas, rental and maintenance, the gas company to turn on and off the lamps a great many business men can then be persuaded to install ornamental gas street lighting in front of their places of business.

Business in Print

Many banks and business houses encourage intelligent reading by their employees, declares Richard H. Waldo, secretary of the New York *Tribune,* in an article in *The Nation's Business.* Notable among these are the National City Bank with twenty thousand volumes and four hundred thousand indexed pamphlets, the Metropolitan Life Insurance Company with 19,000 volumes, J. P. Morgan & Company with over 6,000, and others with from 4,000 to 300 or so of selected works available for the senior and junior staffs.

The National City Bank, through its educational department—one of this institution's most important sub-divisions—recently formed a committee to outline a course of reading and suggest suitable books for the department heads. This committee, made up of bankers, college professors and men in close touch with foreign trade, submitted a course which covers several years of consecutive reading.

A Good Industrial Business That Can Be Built Up Easily

A Selling Plan for Lard-Rendering Equipment Outlined—Model Letters Which Show the Prospect that Company Is Familiar With His Problems

By GILBERT C. SHADWELL

In an article in a previous issue of the American Gas Engineering Journal—Feb. 3, page 123—the process of lard rendering was described in detail. The advantages of gas for this purpose—even to the point of fuel cost, though the wood from the packing cases, crates, etc., usually employed is obtainable free—are so manifest as to make every butcher shop in a company's territory an easily obtainable industrial fuel prospect. If the butcher does not render his own lard he can be induced to do so when it is demonstrated to him how easily it can be done using gas as a fuel. The following campaign would be an inexpensive one to undertake, and will be found effective in results.

FIRST—Make up a card list of the meat shops in your territory on prospect cards.

SECOND—Send out the following letters at intervals of one week in such a manner as to make each recipient feel that he is receiving personal attention. Distributing a lot of printed circulars will not do the business. Do not address the firm. Address the man who has authority to settle the matter.

Butchers' Letter No. 1

Mr. Julius Vogel,
Centre St. Market,

_____, _____.

Dear Mr. Vogel:

We have made a discovery which we want every meat market to have the benefit of, namely, that GAS FOR RENDERING LARD IS CHEAPER in the long run THAN old BROKEN CRATES and boxes—to say nothing of coal.

Sounds unbelievable, you say. That is just what some of us thought when the same thing was put up to us.

We have investigated and WE KNOW. We have arranged with the manufacturers to buy the furnaces at rock bottom prices, and we are going to give every meat shop the benefit.

YOUR LARD isn't always JUST RIGHT if you use wood or coal. If yesterday's lard was good, how can you make it the same today. Maybe the fire is hotter—possibly it is less hot. If you don't cook it enough, you spoil its keeping quality; and if you cook it too much, you boil away goods worth 18 cents per pound! And just one pound is worth more than the amount of gas needed to render 150 pounds of fat! Look at those figures again: in order to make sure that your lard is done when rendering with the uncertain fire of wood or coal, you must cook it long enough to "play safe"; and when you do this you waste more lard than would be needed to do the work with gas!

You see it is a different matter from what you thought. The gas is even. You can make the lard just the SAME DAY AFTER DAY, because all that is needed is to set the gas valves at the same place and run the furnace the same length of time. With the uniform gas fire, you only need to know the EXACT TIME necessary to just finish the lard, and then you do not need to cook it for a single moment longer.

Use gas and eliminate the shrinkage. Make a perfectly uniform product. The saving in the shrinkage and the superior selling quality of the lard WILL PAY a profit over the cost of gas at $1.00 compared to the broken crates which cost nothing.

Can you come into the office and see the furnace where I can explain the whole story?

Yours very truly,

BUTCHERS' LETTER NO. 2

Mr. Julius Vogel,
Centre St. Market,

_____, _____.

Dear Mr. Vogel:

We wrote you last week that you could MAKE A SAVING BY using gas for lard rendering.

Our purpose was to bring to your attention the newest and most recent developments in the meat business. We try to advise all our customers in the same way.

But SAVING MONEY is not the only consideration to a man who takes pride in his business.

YOU KNOW and we know that your goods are clean. But if one of your customers finds a splinter of wood or a speck of coal or ashes in your lard, what do you suppose HE THINKS?

But how can a man make lard and be a fireman at the same time without dropping some of the litter from his sleeves into the kettle once in a while? You know he can't. The GAS FIRE is PERFECTLY CLEAN.

You never did like to see the ashes and dirt and kindling in the shop, and you have often wished that rendering could be done with gas. Well IT CAN. And the GAS FURNACE IS CLEAN.

The gas is sanitary and the shop can be spic and span.

And still with its many advantages, the cost of the furnace is less by a good deal than the price of a coal furnace.

Let me know, Mr. Vogel, when you will be in the office. I would like to talk about this to you personally,

Yours very truly,

THIRD—Sign your name to the letters instead of that of the gas company in order to convey the idea that you as an individual are looking after this rather than that the corporation is doing it. You personally can get closer to your customers than the gas company as such ever can.

FOURTH—Inform yourself on the subject. There is nothing complicated or technical to be learned. The letters herewith contain the whole story. Read them carefully so that you can discuss the subject intelligently when inquiries begin to come in. (For gas consumption and other details see the data given in the previous article.)

FIFTH—It would be greatly to your advantage to have a furnace on exhibition. Talking about the appliance is an abstract argument, while showing it is a concrete argument. A 50-gal. furnace is recommended for this purpose as you are sure to have many prospects for that size.

SIXTH—Post a card like that shown below not only to inform the public but so that everybody at the gas office will know.

CAULDRON FURNACES
for lard rendering, cooking, etc.

18	gallons	.....$??
25	"	.....$??
35	"	.....$??
50	"	.....$??
65	"	.....$??
90	"	.....$??
110	"	.....$??

This is a 50-gal. furnace.

With a little thought other similar letters can be easily drafted for the sale of tank furnaces for meat cooking, etc., or for the sale of any other industrial appliance.

BUTCHERS' LETTER NO. 3

Mr. Julius Vogel,
Centre St. Market,

_____, _____.

Dear Mr. Vogel:

Lard rendering with wood or coal has always given you a lot of worry. Sometimes you have been half-minded to quit it and sell your pork fat to the packing houses. And to save your life you couldn't figure out which way lost you the most money.

Here is the way out: USE GAS. We have already shown you how you could save on the shrinkage, make a higher grade lard, and have the shop as clean as your wife's kitchen.

And you can get rid of all bother too. You see with gas you don't have to stand over the furnace or stand over the man at the furnace either. If some one comes into the shop, why the lard-maker can leave the furnace all right—no danger of it's boiling over, nor going out either. He can wait on customers or stuff sausages. THE GAS FIRE TAKES CARE OF ITSELF and it will stay just where it was adjusted.

Some think lard should be rendered quickly, others prefer to see it go slowly. Whichever way you like to do it, the furnace has the necessary burner to give you the result you want. You can light only the smallest ring and run it for two hours; or turn it on full speed and get the job finished in one hour or even less. There is no danger of boiling it over when rendering at top speed, for the instant it threatens to boil over you can shut off the gas.

You can teach the thickest-headed man you have to render lard with gas, and get rid of all the worry yourself, if you put in one of these furnaces. They are like a machine—all the man has to do is set his valves and watch the clock!

When shall I come in to see you? I can do you a service.

Yours very truly,

BUTCHERS' LETTER NO. 4

Mr. Julius Vogel,
Centre St. Market,

_____, _____.

Dear Mr. Vogel:

We have described to you the many advantages of using gas for rendering lard.

Now for the cost figures: it costs 10 cents per 100 pounds of fat for the gas fuel—and the difference in shrinkage, as we have explained, will pay for it.

What if those broken crates do cost you nothing—it costs you money to use them—good money, and time and dirt and trouble.

The gas furnace makes a uniform product of superior selling quality. It takes the dirt and litter out of the shop. It takes away your rendering troubles. It makes perfectly clean lard of perfect keeping quality. And it works like a machine.

And moreover it is just the thing for cooking sausage and for scalding chickens. Sometimes you want a lot of hot water in a hurry. You can get it. And you can work up your tallow and get a good price for that too.

We have done the best we could to show you these things. We are not going to write you again unless we hear from you.

Come into the office where we can show you the furnace. We are trying to do you a service. Naturally we are interested to see you use more gas, but we are business men and we know, Mr. Vogel, that A GOOD TRADE MUST HAVE SOMETHING IN IT FOR BOTH SIDES.

When shall I expect you? Let me know so I will be sure not to miss you.

Yours very truly,

If properly taken care of and consistently followed up a most valuable industrial business can soon be built up.

Provision for Gas Lighting Provides Good Stepping Stone to Secure Heating Business

Advantages of Dual Gas and Electric Lighting System as Against Combination System—Advocacy by Public Service Gas Company of Former Shows Results in Increased Heating Business

By J. E. BULLARD

"We find that if we do not pipe houses for gas lighting we are going to lose the gas house-heating business."

When he made this statement R. R. Young, new business agent of the Public Service Gas Company of New Jersey, went directly to the heart of the matter. Already the problem has passed beyond the question of competition between gas and electricity. In the final analysis we find that the decision that gas companies and combination companies have to make is whether gas or oil shall be used for auxiliary house heating.

The Public Service Gas Company has already decided that it wants the house heating and is planning to go after it much more intensively than gas companies have ever gone after it before.

Dual System Has Become Standard

The system which has become standard for installing both gas and electric lighting in the same house has been to duplicate the electric wiring with gas piping and to install at each outlet a fixture equipped to use either gas or electricity.

This combination system has not proven easy to effect. In the case of a new house the increased expense of this system of duplication is an objection which it is often a very difficult job to overcome.

In the case of an old house that has already been wired and equipped with electric light fixtures that are giving satisfactory results the objections to going to the expense of duplicating the wiring system with gas piping and throwing out all the old fixtures is even harder to overcome.

In nearly every instance, however, whether the house is just being built or is an old one there are locations in most rooms where an additional outlet and another light would prove a very great convenience. This being the case it is not nearly as difficult to persuade a house owner to pipe for gas lighting if the gas lights are to have locations entirely independent of the electric lights; in other words where the gas lights improve his general lighting system.

This gives an opportunity to install in each room at least one wall-bracket. At the baseboard the cost of installing a heater outlet is so small and the advantages of such an outlet are so great that in each room where the dual system of lighting is used provision will be made for gas room-heaters as well as for the portable electric appliances that nearly all electric house-wiring plans now make provision for.

The actual cost of the wiring and the piping if done according to the dual system is considerably lower than the cost of the combination system and at the same time it gives the householder enough more outlets to make his lighting system much more satisfactory and convenient than would be the case if the old combination system had been followed.

Advantages of Dual System

There are now on the market excellent examples of both gas and electric fixtures, but there are few really satisfactory combination fixtures. Those that are satisfactory are likely to be so expensive as to meet with serious objection from the house owner.

Most combination fixtures are likely to be either gas fixtures with electric emergency equipment or electric fixtures with gas emergency equipment. Few give equally good results regardless of which source is used.

These facts added to the extra cost of the combination system give added superiority to the dual system of lighting.

Where dual systems are used more outlets can be installed for a given cost. Fixtures especially designed for making the most efficient use of the source employed can be used. Both electric and gas baseboard outlets can be installed to far greater advantage.

This assures the consumption of more gas and more electricity by the consumer. On account of the convenient baseboard outlets, it means a very material increase in the gas used for room heating.

It is hardly natural to expect a consumer to buy a gas room-heater and use it for house heating if the only gas outlet is in the kitchen and it will be necessary to run a long hose from that outlet to the room to be heated. Such a consumer will purchase an oil heater which can be carried from room to room and used where most needed. The dual system of lighting makes it possible to sell gas where, otherwise, oil would be used.

The advocacy of the dual system of lighting has already proven so effective that the meter readings are now showing the increased use of room heaters. This is also being shown by the increased sale of heaters. In fact the increased sale of fuel gas is enough to warrant the greatest efforts on the part of the company in encouraging the dual system of lighting.

The company is now working on plans which will show in detail wiring and piping layouts. These plans are not being prepared for to show only in a general way how the system can be applied. A set of plans is being prepared for each class of house that is being built to any great extent in the territory served.

These usable workable plans will be given to architects, contractors and prospective home builders. It is expected that by the time the Spring house building begins any one interested can be supplied with a plan directly applicable to the particular house under consideration.

Complete Advertising Campaign in Course of Preparation

In addition to these plans which are designed to render a real service to the architect and the home builder a complete advertising campaign is in the course of preparation. This campaign is designed to educate the public and to show it the advantages of adopting the dual system of lighting. It also will stimulate an increased use of house-heating by gas.

The value of any plan or of any system is measured by the effectiveness with which it works. The sincerity of any man or any company in respect to any plan or system is measured by the intensity with which he or it pushes the plan or system.

In far too many cities an extremely small percentage of houses are being piped for gas. It is not so many years ago that a man made the statement at a gas convention that in so far as he knew none of the houses constructed in his city were being piped for gas lighting. These being the facts the results already secured by the New Jersey company show that the system is workable and that the company is convinced that it is worth while pushing it.

During the past year there were constructed in the district where this dual system is being tried out some 4,000 new houses. Of these about 60 per cent. were wired and piped for lighting throughout. About 30 per cent. were more or less completely piped. Only 10 per cent. had no gas lighting equipment at all.

MOTION PICTURE THEATRE USING GAS LIGHTING

Moving Picture Theatres Good Prospects for Gas Lighting

Proprietors Are Beginning to Realize Panic Danger Due to Sudden Shut-off of Lighting System and to Consider Gas Lighting a Cheap and Excellent Insurance

The fact that every moving-picture theatre must have a supply of electric current does not make it look like an attractive prospect for gas lighting. The most obvious method of securing such business appears to be to install an isolated electric plant driven by a gas engine.

In every moving-picture theatre, nevertheless, and especially in the small villages or city suburbs where aerial transmission is employed by the electric light company, there is a good market for gas lighting even though electricity is used for the projecting machine and all the lighting that must be controlled from some central point.

One can imagine how serious the consequences would be if during a thunder shower on a summer's night the electric supply should be interrupted and the house be left in complete darkness, then following a brilliant flash of lighting some nervous person should cry, "Fire!"

More and more moving-picture theatre men are coming to realize the danger of such an occurrence. They are, therefore, placing gas lights at all exits and installing a sufficient number of gas arcs throughout the building so that the theatre may be well lighted even though the electric supply fails. They consider this an excellent and cheap insurance. After such an installation has been made it is usually not difficult to install several gas arcs on the outside of the theatre.

The theatre shown in the accompanying illustration, located at Port Washington, L. I., has an emergency gas-lighting equipment in the interior and also gas outdoor lighting. When the theatre was first built electric outdoor lighting was given a thorough trial but never proved as satisfactory either from a financial or a service point of view as gas lighting which has now been giving entirely satisfactory results for several years.

Effects of Using Gas on Kitchen Ventilation

In a letter to the editor of the Boston *Herald*, Theodore Bunker, of the engineering department of the Public Service Gas Company, of Newark, N. J., states as follows:

In the Feb. 7th issue of your newspaper appeared this quotation from a lecture delivered by Miss Helen Green before the Consumers' League of Massachusetts: "Where *gas* is used, the gas burns up the oxygen and makes the atmosphere deadly. When electricity comes in for cooking it will greatly improve the conditions."

The quantity of gas used in the ordinary kitchen range when burned in the ordinary sized kitchen has very much less effect upon the atmosphere than the occupancy of a single individual.

The products of burning gas are perfectly harmless, being merely water vapor and carbonic acid gas. It has been definitely shown by wide experimentation that the quantity of carbon dioxide gas in the air may vary within wide limits without producing any effect upon health, and it has also been conclusively shown that the carbonic acid gas produced by the combustion of gas in a range or light is so chemically pure that it has no deleterious effect such as undoubtedly occurs from the carbonic acid gas exhaled from the human lungs.

It is true that any room in which persons live, or in which any form of heat is developed, should be properly ventilated, and I would respectfully suggest that much good work could be done by attacking the problem of healthful living conditions in the kitchen from the standpoint of adequate ventilation.

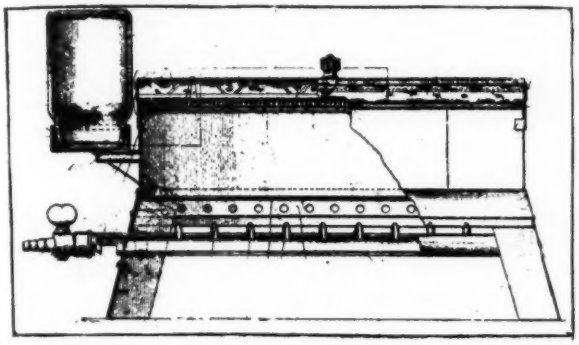
The hope that electricity for cooking will cure ventilation evils is delusive in the extreme. The general use of electricity for cooking is most problematical, and, if ever realized, will be in the far future.

But even if electricity were used and no oxygen consumed thereby, the ventilation of the kitchen would not be improved, as the currents of hot air generated by gas burning rise to the ceiling and produce in themselves an excellent ventilating effect, which would be entirely absent in the case of an electric cooker.

Effects of War Beneficial to Expansion of Gas Industry in Japan

A sudden stoppage of importations of the by-products of gas manufacture from Europe due to the war has caused China, India and the Ocean Colonies to turn to Japan for such supplies. The gas industry in the latter country is making plans to insure its retaining these markets upon the return of peace.

Patents Pertinent to Gas Industry



Apparatus for Treating Fabrics Uses Gas as Fuel

Patent No. 1,209,773; described in Patent Office *Gazette*, 12-26-16, page 1155. Math Smith, Davenport, Iowa. Filed March 31, 1916. Serial No. 87,890. (Cl. 26-7.)

This apparatus consists of a burner holding frame which supports a steam generator. The generator is formed with a continuous elongated slot in its top wall. A water trap extends under this slot in order to entrain water into the generator, but which also permits the escape of steam or vapor through the slot. The steam is evenly distributed to the fabric under treatment, a lid being provided to cover the apparatus.

Coal Handling Apparatus Allows Delivery of Coal at One Part of Storage Space While Removing It from Another

Patent No. 1,208,996; described in Patent Office *Gazette*, 12-19-16, page 856. James M. McClellon, Everett, Mass. Filed Jan. 14, 1915. Serial No. 2,240. (Cl. 214-4.)

In this arrangement there are two trestles, one of which is so built that it can pass beneath the other. Both of the trestles can be moved from one end of the storage space to the other. Mounted on one trestle is a grab bucket, which may be used to fill cars placed under any of the hoppers, the hoppers being part of the trestle. At the same time, the smaller trestle may be in another place, receiving coal and by means of a conveyor system distributing it to any part of the pile. A novel means is used to divert the cars from the fixed trestle to the platform which is a part of the smaller trestle.

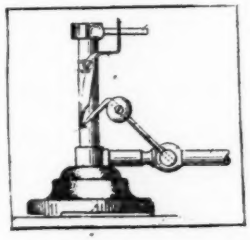
Coal Stove Convertible Into a Gas-Burning Range

Patent No. 1,211,864; described in Patent Office *Gazette*, 1-9-17, page 545. James McGovern, Taunton, Mass., assignor to The White-Warner Company, Taunton. Filed June 19, 1916. Serial No. 104,372. (Cl. 126-36.)

This coal stove may be converted into a gas range by attaching an oven shelf to the front part of the oven bottom which projects outside of the body of the stove. This shelf has a trough-like depression formed to hold a burner, and opens into the oven, to convey the heat from the burners to the oven.

Means Provided for Automatically Extinguishing Gas

Patent No. 1,209,890; described in Patent Office *Gazette*, 12-26-16, page 1198. George Philipp Schmitt, New York, New York. Filed March 24, 1916. Serial No. 86,374. (Cl. 67-117.)



At the top of the burner tube, coils of two metals of different coefficients of expansion are provided. The movement of these coils is transferred to an arm extending outwardly from the tube on which a ratchet pawl is pivoted. Through a lever, fastened to the burner tube, motion is transferred from the pawl to a second lever, which in turn is connected to a valve on the gas supply.

Integrating Mechanism Provided for Flow Meter

Patent No. 1,209,567; described in Patent Office *Gazette*, 12-19-16, page 1052. Austin R. Dodge, Schenectady, N. Y., assignor to General Electric Company. Filed Dec. 6, 1915. Serial No. 65,245. (Cl. 234-6.)

In order to move the integrating mechanism a measuring wheel is rotated by the chart. This measuring wheel is attached to a shaft to which is also attached a counter wheel and a worm gearing. The worm gearing engages a toothed wheel which in turn operates a train of gears attached to a counter. Means are provided for locking the gears, when changing a chart or when otherwise desired.

Process for Preparing Hard Commercial Pitch Uses Cooling Agent and Centrifugal Action

Patent No. 1,210,097; described in Patent Office *Gazette*, 12-26-16, page 1269. Ray P. Perry, Montclair, and Edwin F. Stewart, Woodcliffe, N. J., assignors to Barrett Manufacturing Company, New York, N. Y. Filed Feb. 16, 1916. Serial No. 78,643. (Cl. 83-91.)

The molten pitch and the cooling agent—water, are independently introduced into suitable apparatus and are subjected to independent centrifugal action of different intensities. The pitch is projected in an upwardly curved path and passes through the centrifugalized water. The pitch and water finally commingle, the pitch forming into small particles.

Ammonia Condenser Consists of Coils Over Which Water is Showered

Patent No. 1,210,141; described in Patent Office *Gazette*, 12-26-16, page 1284. Louis Block, Mamaroneck, N. Y. Filed Dec. 2, 1912. Serial No. 734,650. (Clo. 257-40.)

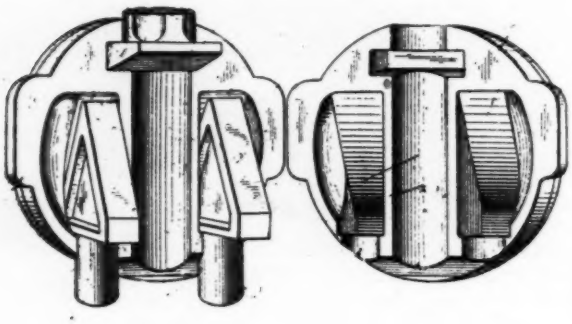
This ammonia condenser consists of trombone coils of pipes, the gas being fed at the lower end of the pipes, the condensed liquid being taken from the upper ends of the tubes. Means are provided for purging the con-

denser of non-condensable gases and a check valve prevents any return flow. A trap prevents any accidental flow of uncondensed gas. Cold water is showered over the coils.

Hot Water May Be Drawn Direct from Heater or Stored in Tank

Patent No. 1,211,858; described in Patent Office *Gazette*, 1-9-17, page 543. Ole S. Johnson, St. Paul, Minn. Filed March 9, 1915. Serial No. 13,292. (Cl. 122-16.)

This water heater is of the internally-heated tank type, and is provided with a combustion chamber near the bottom of the tank. Secured to the top of the combustion chamber is a flue pipe for conveying away the products of combustion. Inside of the combustion chamber are coils which are exposed to the direct action of the heat from the gas burner. A hot-water pipe rises from the coils, through the flue, the latter being provided with baffles, and is connected to the usual hot-water outlet pipe. The cold water is fed into the tank in the usual way, while a pipe conveys water from the bottom of the tank to the coils.



Triangular Wedges Used in the Valve Gate

Patent No. 1,212,090; described in Patent Office *Gazette*, 1-9-17, page 621. Foster Milliken, Lawrence, N. Y. Filed Aug. 18, 1916. Serial No. 115,636. (Cl. 137-5.)

The gates in this valve are provided with a pair of grooves, arranged to engage a pair of triangular wedges when the gates are being lowered into place. The wedges expand the gates and force them against the seats.

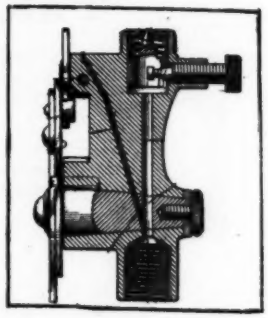
Gas Water Heater Built on New Principle

Patent No. 1,211,801; described in Patent Office *Gazette*, 1-9-17, page 522. David Whiteford, Chicago, Ill. Filed June 28, 1912. Serial No. 706,343. (Cl. 122-18.)

In this gas water heater the storage tank is mounted on a stand, and has the usual cold water inlet and hot water outlet pipes. In addition, a heating bowl is directly over the gas burner and is suspended from the tank by a coupling which is so constructed that it allows cold water to pass downward into the heating bowl. The cold water is surrounded by hot water which passes through a hot water pipe extending from the heating bowl up to the top of the tank. By this means it is hoped to heat the descending cold water. No flue to carry off the products of combustion is provided.

Single Control Cock Operates Main Burner and Pilot Light

Patent No. 1,211,891; described in Patent Office *Gazette*, 1-9-17, page 555. Fred Street, Philadelphia, Pa., assignor of one-half to E. Bryan Kyle, Philadelphia. Filed Dec. 9, 1915. Serial No. 65,981. (Cl. 67 16.)

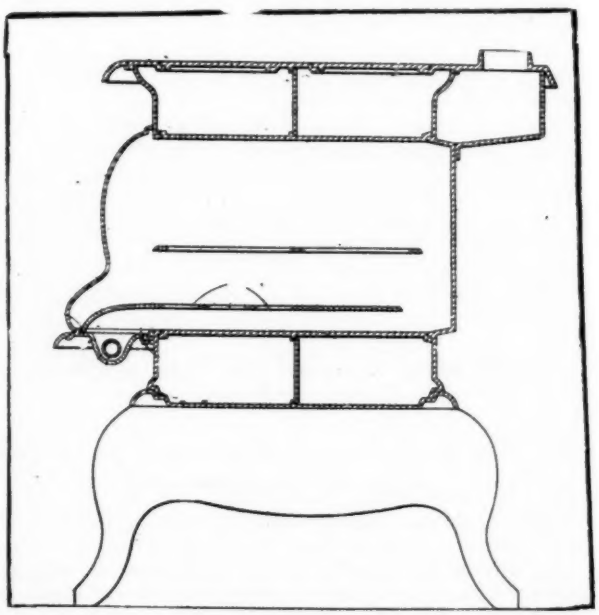


Two passages pass through the body of the cock, one supplying gas to the main burner, and the other to the pilot light. These two passages tend to come together at the lower end. A tapered barrel is provided in the valve with passages arranged in such manner that the pilot light is connected with the supply at all times, while the main burner is only connected with the supply when the barrel is in a single position.

Safety Device Prevents Inadvertent Opening of Wrong Burner Cock

Patent No. 1,209,215; described in Patent Office *Gazette*, 12-19-16, page 930. Harry A. Shunk, Brooklyn, assigned to General Gas Appliance Company, New York. Filed Jan. 2, 1914. Serial No. 809,812. (Cl. 126-42.)

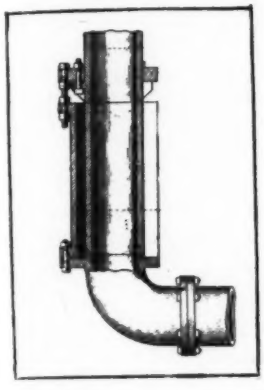
This device is to be used where a gas range is equipped with one burner in the bottom of an oven and another, which is used for broiling, in the upper part of the oven; or when the gas outlets to the burners are located on different faces of the stove. It consists of a sliding rod which engages stops or cams on the valve stems. When one valve is opened, the cam raises the rod to such an extent that it jams the cam on the other valve and prevents its operation and either prevents the use of one of the two burners simultaneously, or the turning on of one burner while the other is being used.



CAN BE CONVERTED TO GAS RANGE BY ATTACHING SHELF

Ash Conveying System Provided with Removable Part

Patent No. 1,211,500; described in Patent Office *Gazette*, 1-9-17, page 418. Arthur P. Strong, Chicago, Ill., assignor to Green Engineering Company, East Chicago, Ill. Filed Oct. 11, 1916. Serial No. 124,923. (Cl. 137-75.)



This system, for conveying ashes or any other highly abrasive material by means of air pressure, consists of a series of pipes and a removable pipe section inserted at the point of greatest wear. A spacing device maintains the same distance between the fixed pipe section or varies the distance if the pipe to be inserted in the place of that worn out is not quite the same length as the part removed.

Gas Igniter Composed of Cerium and Magnesium

Patent No. 1,212,156; described in Patent Office *Gazette*, 1-9-17, page 646. Theodore T. Pomeroy, Haverhill, Mass., assignor to Safety Gas Lighter Company, Haverhill. Filed June 1, 1915. Serial No. 31,341. (Cl. 67-6.1.)

This gas igniter is of the friction pyrophoric type, and consists of cerium and magnesium arranged side by side in close contact, to provide a continuous abrader engaging face. The abrading element is moved over the face of the two metals, so that the heat caused by friction with the magnesium tends to produce ignition of the flying particles of cerium.

Coke Oven Construction

Patent No. 1,211,503; described in Patent Office *Gazette*, 1-9-17, page 419. George E. Thackray, Westmont Borough, Pennsylvania. Original application filed Oct. 28, 1913. Serial No. 797,701. Divided and this application filed Sept. 2, 1916. Serial No. 118,204. (Cl. 202-9.)

The feature of this invention consists in the provision made for expansion and contraction in the walls of a coke oven. The gas burners are disposed in such manner that the nozzles are easy of access for inspection and cleaning from the top of the battery. The size of the air inlet parts are also gradually decreased, thus imparting a more uniform heat to the oven.

Coke Oven May be Heated at Option With Either Rich or Lean Gas

Patent No. 1,208,781; described in Patent Office *Gazette*, 12-19-16, page 783. Ernst Hinselmann, Essen-on-the-Ruhr, Germany. Filed Nov. 24, 1914. Serial No. 873,735. (Cl. 202-9.)

In order to allow the oven to be heated with lean gas, regenerators are inserted between the channel brick columns serving for the admission of rich gas, the lean gas passing into the regenerators through gas flues which are controlled from the passage below the burners. The preliminary heating of the air is effected in regenerators located sidewise of the burner battery. To facilitate the distribution of the combustion gases over the different poor gas regenerators small valves, adapted to be operated from the passage below the burners are inserted in the main flue behind each regenerator.

Flue Lining Insures Uniform Air Space

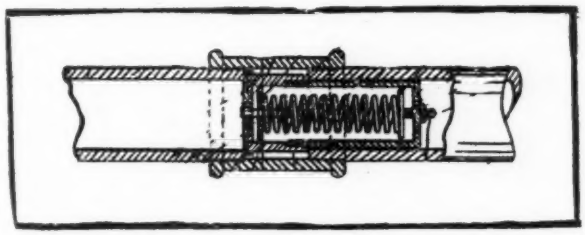
Patent No. 1,209,935; described in Patent Office *Gazette*, 12-26-16, page 1214. Edwin M. Campfield, Richmond, Indiana. Filed Oct. 7, 1915. Serial No. 54,696. (Cl. 72-94.)

The inner lining of the flue is separated from the outer member, and has an outstanding flange of uniform width which extends continuously around one end portion. This flange fits snugly against the inner faces of the wall of the outer member and forms longitudinal non-communicating air cells. The flanged ends are arranged to form a seat at one end of the lining section.

Inventor Claims This Device Saves Gas by Reducing Pressure

Patent No. 1,211,583; described in Patent Office *Gazette*, 1-9-17, page 447. Chas. H. Homeier, St. Paul, Minn. Filed March 31, 1916, Serial No. 88,129. (Cl. 67-119.)

This device consists of a cap with its ends extensively perforated, and a thimble which is fitted inside of the



cap and which has a perforated end. The cap is inserted between the two pipe ends, and held in place by drawing the pipes together. A diaphragm to which is attached a spring, is mounted near the perforated end of the cap, while the other end of the spring is supported on the bore of the thimble. The diaphragm operates under the pressure of the gas and reduces the flow through the pipes, but is in no sense a pressure regulator.

By-Product Coke Oven Responsible for Much of Refractories Investigation

Very little has been generally known about refractories and the adaptability of one kind of material over another for a particular class of work, states Walter Gray in an article in *Metallurgical and Chemical Engineering*. Engineers have been very well satisfied if the refractory material would reasonably withstand the action of the flame and have not experimented, or investigated with a view of securing the most efficient and economical material. To the advent of the by-product coke oven in the United States is due much of the investigations of refractories which have been made. These experiments and others which have been conducted indicate quite clearly the advantages of silica brick in many metallurgical and industrial operations. The investigations show that the field for the use of silica is not restricted, and that its adoption may in many cases prove a decided economy.

Correspondence

Can Gas Industry Compete with Shipping Interests for Oil Supply?

SIR:—Apropos to the oil situation and the possibility of its being bettered in the future, the following might be of interest to the gas industry:

C. T. Revere in the February number of *Moody's Magazine*—the Investor's Monthly—cites this interesting experiment to illustrate the advantages of fuel oil over coal for propelling steamships.

"The *Arizonan*—a steamship belonging to the American-Hawaiian Company—made two trips—one under coal fuel, and one under oil fuel. The voyage was from New York to Pacific ports, thence to Hawaii and back to Philadelphia via the Straits of Magellan.

"With coal the voyage required 186 days, and with oil 161 days. The time saved on the round trip was 25 days.

"Of this time 7 days were saved by more expeditious loading of fuel, and 18 days by increased speed.

"The item of quick bunkering is important. A large ship that requires two days for bunkering with coal can be loaded with oil in four hours. There is the additional advantage that in loading and unloading cargo there are no coal barges in the way.

"The cost of the fuel consumed on both voyages of the *Arizonan* was practically the same.

"On the oil burning trip $4,813 was saved in feeding men, $12,500 came in reduced expenses due to 25 days' shorter running time, $1,000 in lighter disbursements at fueling points, and $1,275 gained in revenue from increased freight space—a total of $19,500 for the single voyage.

"No account was taken of the 25 days of extra gross earnings, the profit for which, considering the price now paid for ocean freight room, would have run into large figures.

"It is well to consider, from a more detailed standpoint, the advantages of fuel oil in our merchant marine. In the first place, there is increased cargo or passenger capacity. A short ton of coal occupies 40 cu. ft. of space. A short ton of oil occupies 35 cu. ft of space.

"The coal, however, must be put in the hold of the vessel, while the oil may be carried in the double bottom instead of water ballast. The present coal bunker space can be utilized for cargo, and with freight rates at their present altitude, the increased earning power would be enoromous.

"Another important item is labor. With oil-burning furnaces 80 per cent. of the present stoke-hole charges are eliminated. Some of our big passenger liners carry 300 stokers. These can be reduced to 60, thus making a saving in wages, feeding of the men and providing accommodation for 200 third class passengers which, at $25 per head, would add $5,000 per trip to revenue.

"There is no cleaning out of ashes and clinkers, which effects a double economy; first through the reduction in stoke-hole labor, and secondly, through increased speed derived from sustained power. The *Mauretania*, for instance, has 192 furnaces with 68,000 indicated horse-power. On every watch of four hours, 32 fires are cleaned, thus entailing a loss of 10,000 h.p. for each four-hour period. All this wasted power would be saved by the use of oil."

Does this not indicate quite forcibly the advantages of oil over coal for propelling steamships? Does it not give us a hint too that it will not be long until a coal-burning steamship of any size will be as much of a rarity as a sailboat of large tonnage?

On the face of it, it certainly does look like the adoption of oil would be good business. The author states quite clearly that the initial cost of the two fuels was about the same. It would still be good business if the ship's owners had had to pay a premium of $25,000 on the cost of oil over coal for the one trip.

Now let us assume that all ship owners are good business men and had the capital available to change all the coal burners over to oil burners—it isn't so much of a task at that either—let us see, taking the same author's figures, what it will mean.

"In order to propel a ship of 22,000 tons, about 670 barrels of oil daily are required. The world has a mercantile marine of about 50,000,000 tons, and it would therefore take over 600,000,000 barrels of oil annually to furnish the power to keep that tonnage moving.

"The demand from the world's navies would call for an additional 75,000,000 barrels per year.

"This total of 675,000,000 barrels is in addition to the requirements of railroads, industrial and purely heating plants.

"According to figures issued by the United States Department of the Interior, the world's production of crude petroleum in 1915 amounted to 426,892,000 barrels.

"From these figures it is apparent that if we stopped using kerosene, gasoline, lubricants and all petroleum products, and turned the entire production of the world's wells over to our merchant marine and navies, we would still fall about 350,000,000 barrels short of requirements.

These facts being true where does the gas industry come in? Can it afford to bid against the shipping interests even under normal conditions for its oil? We know very well that it can not. It has to manufacture its produce to sell at a rate in which it has very little voice in the making. Then beyond that we have seen that the comparison in primary costs would not be much of a factor with the shipping interests either.

Also we've left the motor-car industry out of the calculation altogether. Most of your readers are aware how much of an influence this factor has on the situation. In fact it is the only factor that I have seen dwelt upon to any great length in your columns, which is natural, since it is a factor of the present and the factor I have discussed is one of the future, but not very distant future at that. If you think so send an inquiry around the various shipbuilders. Find out how many oil burners they are building. Also watch the newspapers. See how many coal burners are being converted to oil.

Yours truly,
GAS ENGINEER.

Gas Lighting for Brockton, Mass., School Houses

The school board of Brockton, Mass., has voted to recommend to the public property committee of the city government, the installation of gas lights in all the buildings used for evening schools. Another proof of the economy and dependability of gas lighting.

Cost for Fuel to Smelt and Assay Over a Million Dollars Worth of Gold and Silver Ore, Using Gas, is $225

Government Installation at Boise, Idaho, Renders Satisfactory Service—Replaces Old Type of Coal Furnace, and Saving in Labor and Cleanliness Practically Offsets Cost of Operation—$25,000 Worth of Gold Ore Raised to Required Heat in 45 Minutes, Using 150 Cu. Ft. of Gas

By C. E. GRAY, JR.

Manager, Boise Gas Light & Coke Company, Boise, Idaho

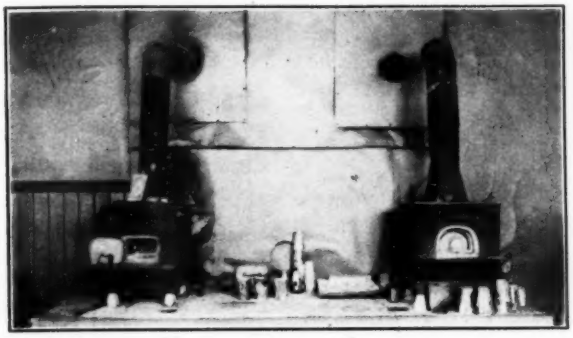


FIG. 2. BORINGS FOR ASSAYING PLACED IN CUPELL AND REDUCED TO MOLTEN STATE IN THESE SMALL FURNACES

An industrial fuel installation comprising some very interesting and unique features has been placed in the United States Assay office in Boise, Idaho, by the Boise Gas Light & Coke Company. The equipment consists of three large crucible furnaces built for this purpose by the American Gas Furnace Company, shown in Fig. 1, and two cupelling furnaces shown in Fig. 2, all connected and fired by a gas and air blast.

The crucible furnaces are used for the melting of gold and silver ore and bullion. The ore when ready to be melted is placed in the crucible, and then closed in the body of the furnace to be used and the gas blast turned on.

In the larger furnace shown in the left of Fig 1, $25,000 worth of gold ore can be handled in one melting and raised to the required heat—2,000 deg.—in 45 minutes. The gas consumption required for this melting is 150 cu. ft.

Upon reaching the necessary heat, the slag rises to the top and is poured off, the heavy gold settles to the bottom, and is allowed to cool to a solid lump or form into brick in the bottom of the crucible.

After the gold or silver ore has been smelted and reduced to a solid metallic form, it is necessary to assay it to determine its consistency.

A small hole is bored into the brick, and the borings carefully placed in a small round pan-shaped affair about an inch in diameter, made chiefly of bone and called a cupell.

This cupell with its gold or silver filings is then put in one of the cupelling furnaces shown in Fig. 2, the gas blast turned on and the gold reduced to a molten state, the impurities being absorbed into the small cupell leaving a small pellet of pure gold. The percentages of gold and other ingredients are then computed by weight to complete the assay.

This installation has been used for some time by the government office with a great deal of satisfaction, replacing the old type of coal furnace.

The annual gas bill, with a rate of $1.50 per thousand cubic feet, amounts approximately to $225.

The saving in labor, time and cleanliness in itself, is so satisfactory that it practically offsets the annual cost of operation.

Over a million dollars worth of gold and silver ore are treated annually in this efficient manner by these furnaces.

FIG. 1. SMELTING DONE IN TWO LARGE FURNACES BUILT FOR THE PURPOSE

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FINANCIAL NOTES WILL BE FOUND ON PAGE 16 OF THE ADVERTISING SECTION

Lard Rendering a Field for Industrial Fuel Gas

The selling campaign to secure industrial fuel business in butcher shops which is outlined elsewhere in this issue should be successful for two reasons.

The first of them is that the gas company representative in the model letters devised will show an unusual insight and understanding of the butcher's problems. This will surprise him, flatter him in a way and insure that he will follow the series with interest. The gas company is thus assured that its arguments will not be delivered to the waste basket alone.

The second reason is that the letters appeal directly and forcibly to the man's instinctive desire to increase his profits and to his pride in his shop. This is the factor that will supply the "punch;" the incentive to buy.

A New Era of Gas Lighting

Gas men are in nowise different from other men. The fact that they manufacture, distribute and sell gas does not make them a race apart and totally unlike their fellows. Likewise the gas man has the average man's proportion of good and bad qualities.

It is human to become obsessed of one idea to the exclusion of all other ideas; also to follow enthusiastically what may seem the line of least resistance, neglecting as we do in our spirit of conquest some other tasks that are just as simple of accomplishment as the one that seems to us the easiest.

We are in the habit of looking at our lighting as an established part of our business; something that we should take care of, but not necessarily push. Some are backward enough to think that it is a part of our business that we must inevitably lose; a contingency that we should provide for by securing other classes of business.

The tendency in the gas industry in regard to lighting is an aggressive tendency. This factor we must not lose sight of. Our total sales of gas for lighting are, in the future, going to be vastly greater than anything we ever dream of at present. This may seem wild fancy. The statement is in nowise unfounded in fact.

Consider the article published some time ago in this journal in regard to the gas company that came in as a competitor for some of the lighting business an already-established electric company had a monopoly on. It was not a case of gas displacing the tallow candle, sperm oil or even kerosene. It was a case of gas displacing what our electrical friends tell us is the most efficient illuminating agent obtainable.

Consider also the spirit of the last two annual meetings of the New England Association of Gas Engineers; probably the most conservative association in the gas industry. Did they discuss the lighting business as something we must merely protect? We did not sense the spirit of the meetings in such manner.

As we caught it the spirit was one of aggressiveness; expansion! This oldest association in the industry looks ahead to its lighting business, not behind. There is a hint of a new era of gas lighting; one in which it will attain a degree of importance it never has attained hitherto, though once it was our whole business.

The instances cited are but two of many which lead to the same conclusion. Unquestionably there is to be a marked revival in gas lighting in the very near future.

Fool-Proof Equipment

The National Board of Fire Underwriters is at present interesting itself in an educational campaign to reduce the number of fires due to small electric devices such as pressing irons, curling irons, toasters, electric plate warmers, etc. While commending the purpose, this journal believes the board is placing too much confidence in the efficacy of educational work as a means of accomplishing its object. In other words, while we do not in anywise detract from the value of educational work, we firmly believe that the proper point to attack the problem is at its source, the appliance.

"It is safe to say," states the board, "that most of these fires are entirely preventable, and can be charged to carelessness on the part of the user."

Perhaps, according to a strict, academic definition of the word, such is the case; that if the consumers at all times exercised the precautions they should there would be no such thing as fires due to these causes. But the element of memory enters, and some of us are not so free from forgetfulness as others.

"Various 'safety' devices have been added by certain of the manufacturers of these articles, and among them are some that are fairly effective, but there is one absolute precaution which should be borne in mind at all times by every user, namely, that of shutting off the current when not personally and continuously supervising the use."

The "absolute precaution" seems a simple one to adopt, but when one considers human nature and the character of the interruptions which the usual user of such devices is subjected to, one does not feel quite so certain that it will be adopted to any considerable extent.

We know of one large gas company which has its offices equipped with as convenient a system of gas lighting as one would desire to see. Electric lighting from the angle of convenience does not possess one point of advantage over it. There is not a lack of temptation for the company to push a selling campaign among its consumers with this system as a lever. A vast increase in consumption could be readily gained.

Why, then, doesn't it do so? Simply because the distant-control feature of the system has not been made absolutely fool-proof. There is no lack of alertness on the part of the officials of this company towards increasing its lighting business, but they think first of the reputation of gas, and afterwards of their immediate profits.

There is nothing about this system that would require an especial amount of carefulness to insure against all danger. In fact, many would consider the assumptions of the company officials as quite far-fetched. But their attitude, nevertheless, is what we consider would be the proper attitude in the matter of these small electrical devices.

Little should be dependent upon studied carefulness on the part of the public. There are too many possible slip-ups.

Spread Eagle Methods in Technical Journalism

In a recent canvass for suggestions as to how we could make the AMERICAN GAS ENGINEERING JOURNAL of greater usefulness and interest to its subscribers, we unearthed quite a few unique proposals. There were a number who proposed the adoption of "spread eagle" methods and the inclusion of jokes, jibes at prominent men in the industry, cartoons, etc.

We fear that some of our correspondents derived an erroneous impression from the wording of our request. We do not seek to publish this journal in competition with *Puck* and *Judge* in the way of humor, or with the daily press in the matter of lurid articles and red headlines.

We have been accused of being conservative. We plead guilty on all counts insofar as this conservatism reflects our belief that we are publishing a class journal for the benefit and enlightenment of serious-minded men.

Our primary purpose is to disseminate information that will enable the gas man to manufacture, distribute and sell his product in the most efficient and economical manner possible, that will enable him to render the very best service to his customers, and that will round him out and make him a better gas man.

We realize that he is a busy man. For that reason we try to furnish him this information in the most concise form possible, without the sacrifice of essential details. The requirement would seem to bar out all humorous digressions; all flippant comments.

We try to accomplish our purpose and at the same time make our articles interesting to read, but we realize that any interest the reader may find in them must be necessarily based on a knowledge on his part of the subjects dealt with. The AMERICAN GAS ENGINEERING JOURNAL will not be found on the news stands. There would be very little sale for it there if it was.

We do not seek to appeal to the layman mind. We do not believe the gas man looks to us for his lighter entertainment. We consider that he looks to us rather for the class information indicated, and, in proportion

to the extent we succeed in supplying him with it, we feel satisfied that we have succeeded in discharging our mission.

Gas Versus Electric Cooking—The Engineering Aspect

Now that there is so much talk about the forthcoming electric competition in the cooking field it should be interesting to see just what part the engineer will have to play in waging the expected war of competition.

On page 1,260 of the *Seventh Revised Edition of Foster's Electrical Engineer's Pocket Book* we read that the ordinary solid fuel cooking stove has a thermal efficiency of about 2 per cent.; that electric cooking devices average about four times as efficient as gas cooking devices and that the efficiency of electric devices runs from 70 to 90 per cent. The same authority also gives the fair average heat value of coal as 12,000 B.t.u., the production of gas from a pound of coal as 5 cu. ft., at 600 B.t.u. per cu. ft. and the generation of electricity from a pound of coal as ¼ kw.

Using these figures we find the following relation to hold between coal, gas and electric cooking.

UTILIZATION OF THE HEAT UNITS IN A POUND OF COAL

	COAL	GAS	ELECTRICITY
Lost before and after using.	1,440		
Lost up the chimney or used in producing or generating	8,400	9,000	11,147
Radiation and ventilation...	1,920	2,400	170.6
Useful heat. Gas range 20 per cent. eff. Elec. 80 per cent. eff.	240	600	682.4
Total	12,000	12,000	12,000

This table points out three important items: First, the extreme wastefulness of burning solid fuel in the kitchen; second, a present waste of heat in the gas range; third, the greater cost in heat units to generate electricity than to produce gas.

This indicates that while the electric man can hardly expect to increase the efficiency of his heating utensils to any great degree there is an opportunity to increase the generation of electricity to a very marked extent. The higher load factor due to the diversity of loads after the heating and power, as well as the lighting fields, having been thoroughly developed, will make it possible for many central station companies to lower the heat units consumed in generating electricity some 25 per cent. with the generating equipment now on the market. The use of pulverized fuel may result in still further lowering the heat consumption, and also in furnishing a market for gas coke which will tend to lower the cost of production of gas.

These and other problems of generation appear to be the field in which the electrical engineer must work if he is to make electric cooking practical in the face of gas competition.

With the gas man it is not so much a case of greater economy in the production of gas as in its utilization after production.

When the heat value of all the by-products is taken into consideration it will be found that gas production is already very efficient. The more intensive development of the by-product market will also tend to reduce the cost of gas production in spite of the increased cost of raw materials and labor. It, at least, will prevent any great increase in the cost of production.

The engineering problem then in the present case is one of improving the efficiency of the gas range.

Work that has already been done indicates that there are great possibilities in this direction. Water heaters are already made with efficiencies of from 50 to 80 per cent. and this would indicate that it would be possible to improve ranges to such an extent that they may, at least, equal the electric range in efficiency.

If this is done gas at present rates will have little to fear in the cooking field even with electricity at one-fourth of the present rates.

Continuation of the Candle Power Standard a Blow to Conservation

We have been hearing a great deal during recent years in regard to the conservation of our natural resources. Few of us do not believe in it in principle, and a very few assist in the movement in practice.

The gas industry may well be termed an idealistic industry in that almost its whole reason for being almost is in the conservation of natural resources.

There are many gas men who take pride in their industry and are glad they are engaged in it for this reason alone. They are born conservationists.

This is one reason why the demand on the part of the gas industry for the abolishment of the candle power standard of gas quality has been so insistent.

It is true that there is a dollars and cents reason as well; that the high cost of oil has reduced gas-company earnings to no small extent. But it is equally true that were it not for offense to the feelings of men thoroughly imbued with the ideal of elimination of waste and conservation of natural resources that is represented by this absolute waste of oil necessitated by making gas to a standard that means practically nothing with present-day appliances in use, the mere dollars and cents aspect could not have aroused even a fraction of the efforts that are being made to have a different standard adopted.

The conservation of our coal resources has the consideration of every thoughtful and patriotic citizen. The exhaustion of our coal supply is a matter of very distant date as compared to that of our petroleum resources. In the first case it is a matter of the dim and distant future. In the latter it is something that can already be approximately estimated.

Novel Method Employed to Extract Tubes from Saltwater Condenser

Difficulty Experienced in Loosening Joints Overcome by Drilling and Use of Jacks and Lifting Rod

By RICHARD EMMETT, JR.
Assistant Engineer, Providence Gas Company, Providence, R. I.

Recently a saltwater condenser belonging to the Providence Gas Company at Providence, R. I., was taken apart and removed to a new site for re-erection. As this piece of apparatus had been in operation only six and a half years the tubes, except for scale, were in good condition, and the problem arose as to how to remove the 1,400 cast-iron tubes without damaging them.

The lower ends of the tubes fitted into a 2-in. casting with a ground tapered joint. Some idea as to how tight these joints had become will be gathered when it is stated that a ⅞-in. round iron rod was broken in trying to remove a tube with the upper joint broken. The upper joint was made with about 2½-in. of packed hemp and 1-in. of poured lead.

Tar on Outsides Complicates Problem

Pneumatic caulking hammers were first used to remove the lead, and although special curved tools made to fit the joint were used this method was very slow and expensive. It was also found later that unless the hemp was loosened, the tubes could not be lifted as the tar, etc., on the outside clogged in the hemp.

Burning the joint was impractical, so finally, using small pneumatic drilling machines and ⅜-in. twist drills, holes were drilled around the joint about ½-in. apart, drilling right through the hemp.

As the tubes projected through the casting at the bottom it was first suggested that the lower joint be broken by means of small screw jacks, but the cramped space in the lower chamber made their operation impossible. The simple device shown in the accompanying sketch was used.

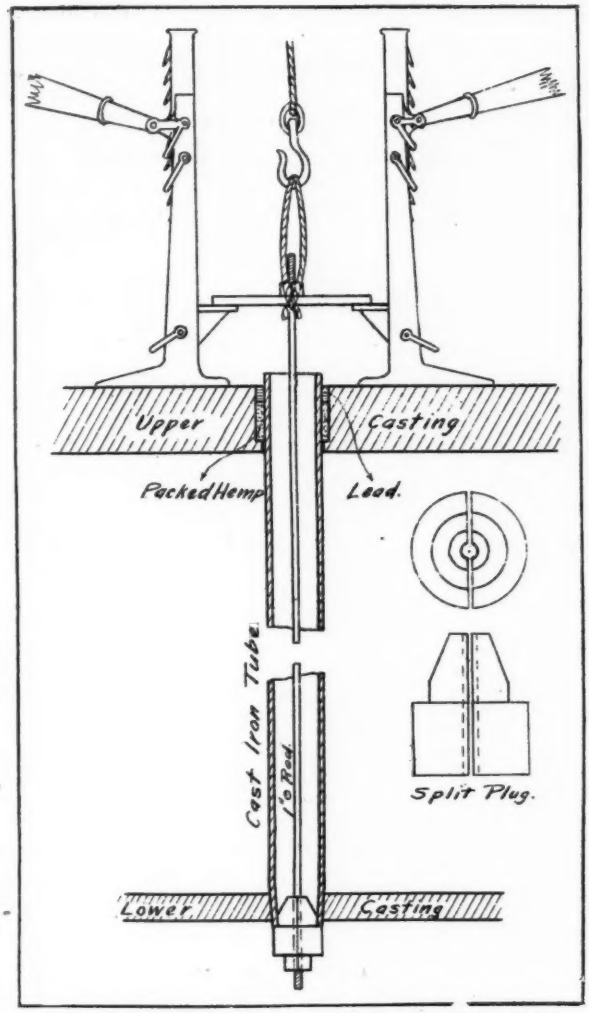
This consisted of a 1-in. round iron rod, about two feet longer than the tubes and threaded at both ends, a plug made to fit the lower end of the tubes and with a hole in the center for the rod a piece of steel about 12 x 4 x 1-in., also with a hole for the rod, and two Albany jacks.

The rod was lowered down inside the tube and the plug, which was made in two halves to eliminate having to remove the nut each time, was placed around the rod and inside the tube. The piece of steel plate resting on the two jacks was held in place by a nut on the top of the rod.

By coming up on the jacks the joint was easily broken. Once this was accomplished the tube was lifted by means of a fall running to the niggerhead of a hoisting engine, and by moving the tube from side to side the ring of lead and hemp at the top would come out in one piece.

Lifting More Difficult on Cold Days

This work was done in the winter time and it was noticed that on very cold days the lifting was much harder. This was due to the tar, etc. on the outside of the tubes and the frozen moisture clogging in the upper joint, so a small steam radiator connected with flexible hose, was placed in the lower chamber of the section from which tubes were being removed.



SHOWING APPARATUS USED TO EXTRACT TUBES FROM SALTWATER CONDENSER

As it is difficult to get a steady pull operating two jacks together, one was set about two inches higher than the other and used as a resting block, operating the other with two men.

When tubes near the sides were being removed, four men made up a gang composed of two at the jacks, one at the engine, and one lowering the extracted tubes with the small fall, and placing the plug. When tubes near the center were being removed, an extra man stayed inside the condenser to place the plug.

One gang of four and five men removed on an average eighty tubes in a day of eight hours. One man drilled an average of sixty tubes a day.

The condenser was 34 ft. long, 9 ft. 4 in. wide and 15 ft. 10 in. high overall.

The tubes were 12 ft. 2 in. long, 3¾ in. external, and 2¾ in. internal diameters respectively weighing about 165 lb. each.

The work was done by the Bartlett Hayward Company of Baltimore and New York, and was part of the erection of the new water gas plant for the Providence Gas Company at Sassafras Point.

Publications

Gas Chemists' Hand-Book

Compiled by Technical Committee, Sub-Committee on Chemical Tests of the American Gas Institute, which includes C. C. Tutwiler, chairman; A. P. Beardsley, S. R. Church, W. H. Fulweiler, R. G. Griswold, C. E. Lewars, J. M. Morehead, C. J. Ramsburg, E. C. Uhlig, A. B. Way and Alfred H. White. A. F. Kunberger served as editor. Cloth bound; 354 pages, illustrated. Publisher, American Gas Institute, George G. Ramsdell, secretary, 29 West Thirty-ninth Street, New York City. Price, $3.50, postpaid in United States and Canada.

Deals with raw materials, products of gas manufacture, impurities in gas, construction materials, alloys, lubricating oils, etc., from the chemist's standpoint. The committee as constituted represents a wide range of activities not only in the gas field but in the coke oven and by-product industries as well.

Chief consideration is given to the standardization of methods of testing and sampling. Included in the work are such tables of constants and data as in the opinion of the committee are most frequently required.

Institution of Gas Engineers; 1916 Transactions

Cloth bound; 358 pages, illustrated. Published by the Institution of Gas Engineers, Walter T. Dunn, secretary, 39 Victoria Street, Westminster, London, England.

Contains annual report of the council on the position of the institution and the work upon which it has been engaged during the past year, reports of various committees, papers presented at the San Francisco International Gas Congress, lists of memberships, etc.

Blackfeet Indian Reservation in Montana May Contain Oil and Gas

The widespread interest in the development of the oil and gas resources of the country gives a forthcoming report on a Montana area special value to oil prospectors in that State.

A report on the Blackfeet Indian Reservation just issued by the Geological Survey of the Department of the Interior as a result of field work first undertaken for the Office of Indian Affairs describes the geology of the southward extension of the Calgary field of Alberta, Canada. The reservation is underlain by the same formations that have yielded small quantities of oil and gas in the Calgary field. The report points out the general similarity of the two regions and discusses the geologic facts upon which an intelligent search for oil and gas in the reservation must be based. To this end it describes in detail about thirteen anticlines and structural terraces, points out favorable or unfavorable features in each, and indicates the most advantageous places for drilling and the depths at which the possibly productive sands may be reached.

The sandstones in the lower part of the Colorado shale and the underlying Kootenai formation are believed to be the only sources of oil and gas in this region. Although there are no known surface indications of oil and gas within the reservation, recent discoveries have demonstrated the presence of petroleum and petroleum residues in the lower part of the Colorado shale in an area adjoining the reservation on the south. There it was found that a body of shale about 50 feet thick, in the lower part of the Colorado, is petroliferous over a considerable area. Small samples of this shale yielded on distillation about 2 gallons of oil to the ton, and thin beds of limestone intercalated in the shale are impregnated with a soft tarry bitumen. These facts, together with the known occurrence of oil and gas in the Colorado shale in Alberta and of seeps from the same shale in northern Montana, lead to the belief that oil and gas may occur in some of the areas of most favorable structure in the Blackfeet Indian Reservation. Eugene Stebinger, the author of the report, believes that the chances for success in the reservation are sufficient to warrant careful and systematic drilling.

Copies of this report (Bulletin 641-J, Anticlines in the Blackfeet Indian Reservation, Montana) may be obtained free by applying to the Director of the United States Geological Survey, Washington, D. C.

Reading as a Means of Developing Personal Efficiency

"Reading as a means of developing personal efficiency is rapidly increasing among us—in the past two years the New York Public Library reports a 75 per cent. increase—but we largely choose the sort of soft stuff which fits with our national characteristics," declares Richard H. Waldo, secretary of the New York *Tribune*, in an article in *The Nation's Business*. "An electuary has an equally quick acceptance as a panacea for a slothful mind or a disordered body. The business stories of the *Saturday Evening Post* are avidly read by hundreds of thousands of business men each week, but the sugar content of these is over large for the health. Headaches and a dull mental eye too often follow their steady consumption.

"*System* recently took toll of some three hundred business men representatives of their fields. The tally showed that about 57 per cent. follow a definite course of business reading, and the courses would, in most cases, make an European business man smile broadly. Chance pamphlets—magazines—ticker bulletins comprise the curriculum of the great majority—crude ore which assays pretty low to the ton. *Trade papers are far too little read even by this intelligent 57 per cent., and as for the remaining 43 per cent.—the less said, the better.*"

Overtime Work Leads to Diminished Output

That working overtime leads usually not to an increase, but to an actual diminution of output, was one of the findings of A. F. Stanley Kent in his study of industrial fatigue, undertaken under instructions from the British Government in seven factories. Overtime proves to be economically extravagant.

The shortening of the working day by 16½ per cent. resulted in an absolute increase of over 5 per cent. of the output, whereas a further reduction from a 10 to an 8-hr. day resulted in a total increase of 12.4 per cent. in the remaining hours.

Where it was desirable to keep machinery running continuously it was found better to introduce a fresh shift.

News of the Gas Industry

Records Show West Virginia Leader of States in Natural Gas Production

Responding to the resolution adopted by the Senate on Wednesday, Feb. 1, requiring the public service commission to have their statistician furnish each member of the Senate with statistics regarding the production and distribution of natural gas in the state, H. E. Nease, of the commission, has submitted his report.

In the production and distribution of natural gas Mr. Nease's report to the Senate shows:

West Virginia ranks first among the states in the volume of natural gas produced. For the year ending Dec. 31, 1915, a total of 244,004,159,000 cu. ft. was produced within the state. The total production for the United States, for the same year, was 628,578,842,000 cu. ft., and for the states comprising the Appalachian field, 446,851,889,000 cu. ft. The production of West Virginia was approximately 39 per cent. of the total for the United States and 55 per cent. of the total for the Appalachian field.

There are no available statistics, so far as Mr. Nease has been able to ascertain, showing the quantity of natural gas produced within the state of West Virginia, and the distribution thereof, prior to the year 1908.

The table following shows the approximate production for the year 1908 and subsequent years to include 1915:

Year.	Cubic Feet.
1908	112,181,278,000
1909	166,435,092,000
1910	190,705,869,000
1911	206,890,576,000
1912	239,006,682,000
1913	245,453,985,000
1914	236,489,175,000
1915	244,004,159,000

Complete figures are not available for the year 1916 but reports received by the Engineering and Inspection Departments indicate a considerably greater production than ever before, probably reaching the enormous total of 285,000,000,000 cu. ft.

Rebate for Consumers at Warwood, W. Va.

The Warwood patrons of the Manufacturers' Light & Heat Company, who use the gas for domestic purposes received rebate checks yesterday which came as a surprise to hundreds of people. It is estimated that the patrons of the company received between $2,000 to $2,500 in Warwood. The refund was ordered by the United States Court of the northern district of West Virginia for two cents on each thousand cubic feet of gas paid for between July 1, 1914, to Oct. 31, 1916.

Gas and Electric Profits Cover Traction Loss

That the San Antonio Traction Company operated at a loss during 1916, but that the Gas & Electric Company, an allied concern, made a profit that more than offset the Traction Company's loss, is disclosed by the annual report of the two companies, filed recently with County Clerk Frank R. Newton. These reports, both being for the year closing Dec. 31, 1916, show that while the Traction Company lost in the neighborhood of $50,000, the Gas & Electric Company made a profit of more than $365,000.

A feature of the report of the Traction Company is the showing that the amount paid out for personal injury suits was only $117,338, as against nearly $500,000 in 1915. It is also shown that during the year 1916, the Traction Company expended $643,144.86 in extensions, while the Gas & Electric Company spent $430,-108.66 for such improvements. In arriving at a conclusion regarding net profit or loss, the amount of these expenditures is deducted from the gross operating expenses, inasmuch as extensions are classed as permanent improvements.

The Gas & Electric Company's report follows: Authorized and issued capital stock, $2,200,000; bonded indebtedness, $984,000; floating indebtedness, including bills payable, $140,000.

The assessed value, $3,297,087.41, is made up as follows: Lands, $115,435; buildings, $83,980; equipment, $2,077,-193.79; cash on hand, $9,703.23; machinery, $898,341.11; bills receivable, $94,-434.28.

The annual cost of operation, $1,191,-190.10, is itemized as follows: Salaries, $29,503.24; interest and fixed charges, $57,511.23; insurance, $844.11; extensions, $430,108.06; labor, $163,729.43; taxes, $96,-957.01; fuel, $293,938.55; repairs, $39,-907.91; damage suits, $17,111.03.

The gross earnings, $1,128,278.52 is composed of: Power sales, $722,924.29; gas sales, $404,246.48; miscellaneous, $1,107.75.

Price of Gas Advances in Worcester, Mass.

The advance in gas to consumers in Worcester, Mass., is the first in about thirty years, the price being consistently reduced from $1.50 a 1000 cu. ft. in 1888 to 75 cents a 1000 cu. ft., this lower watermark being reached in January, 1912, which was also the lowest in New England.

Dana D. Barnum, president of the Worcester Gas Light Company, said that this was the only one of the gas companies in the state selling gas at a flat rate to all users. The increase, he said, was the only solution the company had to get the volume of business. In his opinion the increase in bills to the average consumers of gas would vary from 20 to 25 cents a month.

The directors of the gas company were forced to take the step they did, because of the increased cost of coal, oil, labor and miscellaneous materials used in the manufacture of gas. Coal has increased 35 per cent., oil 78 per cent., labor 25 per cent. and miscellaneous articles anywhere from 20 to 40 per cent., while in some few instances the increase has been about double the original cost under normal conditions.

The new prices follow: First, 25,000 cu. ft. at the rate of 85 cents the 1000 feet net, next 25,000 cu. ft. at the rate of 80 cents, next 50,000 cu. ft. at the rate of 75 cents, the present rate, and for all in excess of 100,000 cu. ft. at the rate of 70 cents per 1000 feet. These schedules are fixed on the monthly usage of gas.

Appliance Company Incorporates

The St. Paul Gas Appliance Company, St. Paul, Minn., general dealers in gas and electrical appliances, capital $25,000, filed incorporation articles recently. Incorporators and officers are Frank K. Berry, president, and Paul C. De Vol, secretary and treasurer, both of Battle Creek, Mich., and Fred H. Ash, St. Paul, vice-president.

Brooklyn Salesmen Meeting

At the suggestion of Robert Gair, president of the Robert Gair Company; L. G. Allen, of the J. D. Johnson Company, and T. M. Ambler, manager of the commercial department of the Brooklyn Union Gas Company, an invitation has been sent to a large number of the prominent manufacturing companies engaged in business in Brooklyn to have their principal representatives attend a meeting at the gas company's auditorium, 180 Remsen Street, Feb. 27, at 8 p. m. for the purpose of organizing and stimulating greater interest among the salespeople doing business in Brooklyn.

Lewis B. Franklin, vice-president of the Guaranty Trust Company of New York, will address the meeting on "The Difference Between Selling Credit and Selling Merchandise." C. Louis Allen, president of the Pyrene Manufacturing Company, will also make a few remarks on "The Salesmanship Club's Service."

Precautions at Lynn, Mass.

Precautionary measures are being taken at the Lynn Gas & Electric Company wharfs on the Lynn Boulevard to prevent possible damage to the big gas storage tanks in case of hostilities being declared between Germany and the United States.

Utilities Plant Sold to Gas Company

The railroad commission has issued an order authorizing Mary K. Wohlford, the only woman owner of a public utility in the state, to sell to the San Diego Consolidated Gas & Electric Company the gas and electric system in Escondido, formerly owned by the Escondido Utilities Company, for $40,000. The San Diego company is to issue $30,000 first mortgage, 5 per cent. bonds, and $10,000 preferred capital stock to Mary Wohlford as the purchase price.

The rates to be charged by the San Diego company for gas and electricity sold in Escondido are fixed by the decision. The bonds are to be issued at not less than 95 per cent. of face value, and the preferred stock at par. The rates are those fixed by the railroad commission for the entire system of the San Diego company. If hardships result in any case, the railroad commission will adjust these.

The Escondido Utilities Company built the plant in 1910, and failed in 1915. It was unable to pay a promissory note for $16,000 secured by $32,000 of its first mortgage bonds. The note was purchased by A. W. Wohlford. Possession of the property passed to the Los Angeles Trust & Savings Bank, under the mortgage, and the bank sold the property to Mary Wohlford, daughter of A. H. Wohlford, for $10,000, subject to the outstanding indebtedness. Miss Wohlford has operated the property under an arrangement entered into between the bank and the Escondido Mutual Water Company, which operated the plant. The sale of the property to Miss Wohlford did not pass the legal title to her until the railroad commission had given its sanction.

The San Diego company will add to its capital account $40,000 as the cost of acquiring the property.

The railroad commission has issued a supplemental order authorizing the San Diego Consolidated Gas & Electric Company to issue $334,000 first mortgage, 5 per cent. bonds, and to pledge them at not less than 92 per cent. of face value, as security for promissory notes to pay floating indebtedness and promissory notes as of Dec. 31, 1916.

Senate Committee Favorable to Capital Increase

The Senate corporations committee at Providence, R. I., after a private hearing, voted to report favorably Senate act 60, permitting the Blackstone Valley Gas & Electric Company to increase its capital stock from $4,000,000 to $8,000,000.

James Harris and Edward P. Jastram appeared before the committee in behalf of the Blackstone Valley Gas & Electric Company seeking favorable action on the bill by the committee. No one else except these attorneys was allowed at the hearing.

Members of the corporations committee say the change in the charter of the utilities concern is requested by a majority vote of the stockholders. The act also provides that the par value of the common stock, now $100, be reduced to $50, and that each share of the present common stock shall be exchanged for two shares of the new common stock. The object is to give the common stock more equal voting power.

The measure will probably be reported back to the Senate next Tuesday and will come up on the calendar for passage on Thursday.

Massachusetts Commission Approves Stock Issue with Modification

Following the same principle as that prevailing in the recent decision in the case of the Fitchburg Gas & Electric Light Company's petition for approval of an issue of new capital stock, the Massachusetts Gas & Electric Light Commission has set the selling price for a new stock issue by the Springfield Gas Light Company at a higher price per share than that fixed by the directors. The company asked approval of added stock of $296,200 par value, the share price to be $200 on a par value of $100. The commission holds this to be too low to be consistent with public interest, and orders that the company be allowed to issue 2,429 shares at $225 per share, the proceeds of 1,274 shares to pay notes of June 30, 1916, and of 1,155 shares to meet the cost of additions to plant made subsequently. On June 30 last, the company had $500,000 of notes outstanding. Its net expenditures upon additions to plant have been about $286,000 in excess of provisions made heretofore in the last approval of stock. Work in progress or authorized last June was estimated to cost over $225,000, and extensions of the distribution system during the coming season are expected to cost about $89,000 more.

The commission made a like order in the case of the petition of the Haverhill (Mass.) Electric Company, authorizing 1,714 shares at $175 each, in place of $231,200 par value (2,312 shares) at $130 per share.

The Springfield Gas Light Company's stock has recently sold at over $260, the Board says, and the Haverhill company's stock at more than $210.

Henrico County Rates to Be Lowered

In accordance with its franchise, which stipulated a decrease in price within three years after annexation, the Henrico County (Va.) Gas Company has announced that beginning Nov. 1, its product will be supplied to consumers at the rate of 90 cents per 1,000 cu. ft. instead of $1.05, the rate which now prevails. The announcement was gratefully received by those North Side residents who have been so far unable to enjoy the privilege of 80-cent gas, supplied by the city.

The Henrico company intends to spend about $15,000 in completing the improvements in Ginter Park, North Richmond, Barton Heights and Highland Park.

State Frees Company from Shortage Blame

The Oklahoma Gas & Electric Company is completely absolved from any responsibility for the shortage of gas in Oklahoma City last month when a gas main broke near Shamrock, by an order issued by the corporation commission recently.

The order, written by Commissioner W. D. Humphreys, dismisses the complaint of William C. Ribble, of Oklahoma City, alleging that the company had violated the order of the commission requiring that an adequate supply of gas be furnished at all times.

Had the additional pipe line from Oklahoma City to the fields, which the company is constructing, been in operation it would not have affected the supply of gas, according to the findings of the commission.

"It is evident, however," the commission finds, "that a double line would obviate the necessity of overtaxing the capacity of the present line in order to force gas to consumers during extreme cold weather."

The opinion disposes of all complaints lodged against the gas company.

Lighting Campaign in Connecticut

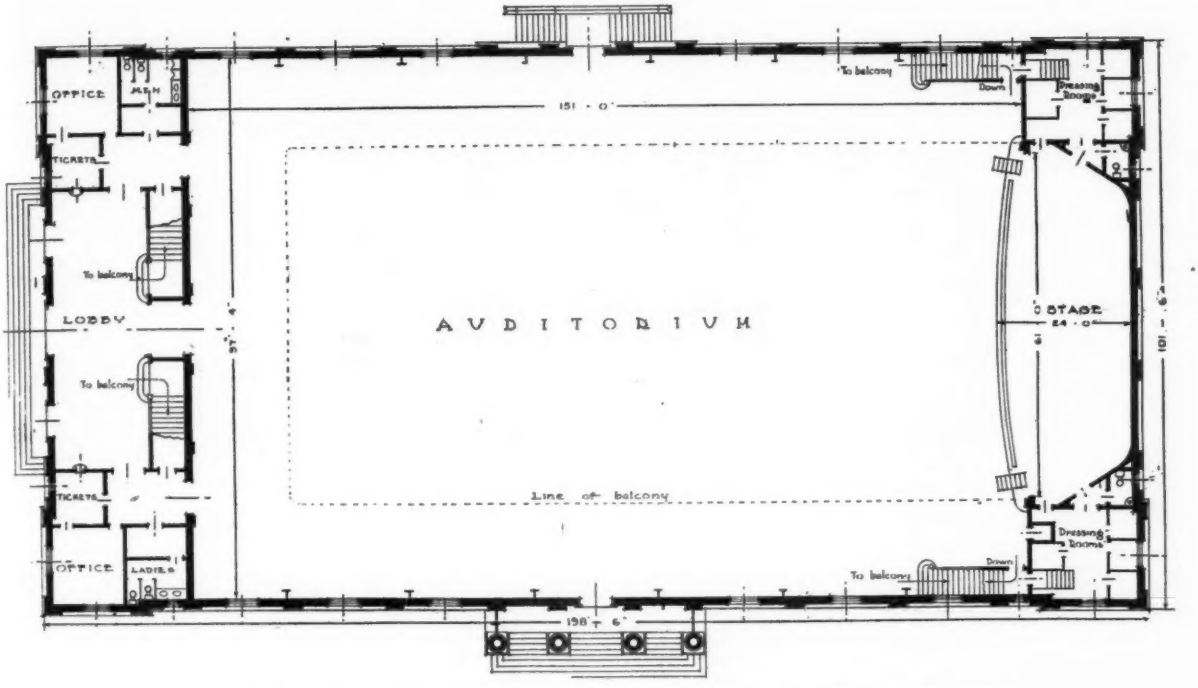
The New Haven (Conn.) Gas Light Company is prosecuting a systematic campaign for the introduction of the C.E-Z. light canvassers covering the entire city and demonstrating the use of the lamps in the homes. The units are sold to customers on easy terms. The company placed an initial order for 10,000 C.E-Z's and has lately added to the order.

Over a third of a million of these lights have been installed during the past year in a few eastern cities where introduced.

The Consolidated Gas Company of New York disposed of 135,000 of these lights in a few months. The Public Service Company of New Jersey, furnishing gas to the district surrounding Newark, N. J., purchased 7,500 of these lights as a starter, and disposed of them in vast quantities. The United Gas Improvement Company of Philadelphia sold 86,000 in a short campaign and their only trouble was their inability to get more lights, and the Boston Consolidated Gas Company sold over 25,000.

Southern Counties Gas Company to Reimburse Treasury

The state railroad commission has issued an order authorizing the Southern Counties Gas Company of California to issue $61,000 first mortgage 5½ per cent., twenty-year bonds, at not less than 92½ per cent. of their face value, the proceeds to be used to reimburse the company's treasury for expenditures for additions and betterments to its plant. This $61,000 is for expenditures by the company last November, and is part of $370,000 in bonds authorized to be issued by the commission Oct. 2, 1916.



FLOOR PLAN OF AUDITORIUM WHICH ROANOKE COMPANY OFFERS TO EXHIBITORS

Roanoke Company Offers Free Space to Exhibitors at Southern Convention

Space on Hand Practically Unlimited—Company Will, of Course, Assume No Responsibility or Obligate Itself in Any Way in Regard to Displays

As the Southern Gas Association's Ninth Annual Convention meets in Roanoke, Va., on May 2, 3 and 4, and as the Roanoke Gas Light Company has secured the new Auditorium for the Convention Hall for this meeting, there is an unlimited amount of floor-space for exhibition purposes.

The company has been approached by different manufacturers of gas appliances to be allowed to make exhibition of their products in the gas office and vacant rooms near by, and we have come to the conclusion that all manufacturers of gas appliances who would make displays at this meeting can have the use of this floor space in the Auditorium where the Convention is to be held without any charge, with the exception of the expense which will be prorated among those making the exhibits. The gas company, of course, cannot be responsible in any way or obligate itself in regard to these displays. The accompanying illustration shows the floor plan of the Auditorium.

Tennessee Newspaper Chooses Gas

Recognition of the merits of gas as fuel caused the Bristol (Tenn.) Herald-Courier, a leading newspaper of that city, to change over its entire equipment to use this product, which will be supplied by the Bristol Gas & Electric Company, operated by Henry L. Doherty & Company.

The equipment changed follows:

4 linotype machines.

1 one-horsepower boiler for matrix table.

1 12-section three-column Clow Gas-team radiator in press pit for heating press.

1 500-pound ingot pot.

1 500-pound metal pot.

1 three-burner gas plate.

3 15-section three-column Clow Gas team radiators for heating office.

The estimated gas consumption is 210,000 cu. ft. a month, which will be increased to 275,000 cu. ft. a month when a four-ton stereotype pot in connected.

Gas Companies Protest Against Making Commission Findings Retroactive

Showing the large number of small accounts that gas companies are obliged to keep, and the attendant cost of bookkeeping, President James L. Richards of the Boston Consolidated Gas Company presented interesting figures at a hearing before the public light committee of the Massachusetts Legislature on a bill that sought to make rate decision by the gas and electric light commission retroactive to the date of complaints.

President Richards said that of the Consolidated company's about 174,000 customers, 27,569 use less than 50 cents' worth of gas per month, 53,626 more use less than $1.20 worth, and 46,825 more customers have average monthly bills of less than $2. Thus there are some 126,000 accounts which are under $2, and the cost of keeping records and of collecting are as great as for the larger accounts.

The principal advocate of the measure was Alton D. Adams of Boston, a consulting engineer now representing the city of Leominster in an effort to secure lower light and power rates. Mr. Adams said it required 12 to 18 months to secure a decision from the gas and electric light commission. The communities interested in rate reductions meanwhile pay the excessive rate. The total amount of this excess was about $30,000 in the Haverhill gas case, Mr. Adams claimed, and the Northampton Gas Company's customers paid some $10,000 more than they should have done were the decision on a rate reduction, rendered in 1915, made effective as from the date of the complaint.

It was pointed out that the excess of payments could readily be rebated by a company, were its rates found too high, but how to accomplish the opposite result, i. e., to reimburse a company which is granted permission to raise its rates, is recognized as a difficult and troublesome matter.

Hon. Albert E. Pillsbury, counsel for the gas interests, said that one effect of such a measure would be to make it impossible for a company to know what it was getting for its product. Massachusetts gas companies are now hedged about with various restrictions and should not have this added burden put upon them.

A bill which proposed to put all gas companies in the state under public own-

ership and management, with provisions that the state build pipe lines, operate coal barges and other means of obtaining their fuel supply, etc., met with scant support except from the representative introducing it.

Vice-President E. N. Wrightington of the Boston Consolidated said gas interests in Massachusetts represent $76,000,000 investment; all the companies together use 1,139,000 tons of coal a year and 26,000,000 gallons of oil. For the state to undertake this investment is absurd. It would more than treble the state debt. An investigation would be costly and consume years.

Following the recommendation of the Massachusetts Gas & Electric Light Commission that the London sliding scale in effect at Boston be repealed unless the Consolidated company and the Massachusetts Gas Companies, a voluntary association holding the capital stock of the Consolidated, the New England Coal & Coke and New England Gas & Coke Companies are divorced, a bill was heard by the legislative committee on public lighting Feb. 21.

Chairman Alonzo R. Weed of the gas commission reviewed the history of the adoption, in 1906, of the sliding scale by which a maximum price of 90 cents was fixed, with provision that the 7 per cent. dividend allowed might be increased 1/5 of 1 per cent. with each 1 cent reduction in price of gas. The sliding scale is common in England, but Boston is among the few American cities having it. By it the company is under no duty to reduce its price, the public expecting, however, that all possible economies in production and efficiency of management, with the result that stockholders shall benefit, will be a sufficient incentive to lower rates.

The presence of the holding company in Boston defeats the purpose of the scale, said Mr. Weed. "No man can serve two masters"; hence there should be no secondary interest in the case. The Consolidated company buys coal and coke from the New England Coal & Coke Company and about half its supply of gas from the New England Gas & Coke Company, another subsidiary held by the Massachusetts Gas Companies. The commission contends that this is inconsistent with the sliding scale plan and was not anticipated when put in effect.

It is true, said Mr. Weed, that the gas company pays no more for its coal than do other purchasers from the coal and coke company. Regarding the purchase of gas from the gas and coke company, the law provides that the price is subject to the commission's review and cannot be higher than the cost of gas made in the company's own works. But the commission feels that it would be better both for its stockholders and the consumers if it were independent. Its management is shrewd and skilful, said Mr. Weed, and the Consolidated company should reap all the benefits.

The sliding scale idea is still championed by disinterested observers, said Mr. Weed. The proposed law is to enable the plan to be carried out under proper conditions. It is the opinion of Commissioners Lewenberg and Schaff that the sliding scale be abolished altogether but the chairman would retain it, providing the holding company is done away with.

The representatives of the company will be heard at an adjourned hearing to be held Feb. 26.

Salem Company Asks Stock Approval

At a hearing last week on the Salem (Mass.) Gas Light Company's petition for the Massachusetts Gas Commission's approval of an issue of 4,093 shares of new stock at $1.30 each, Commissioner Solomon Lewenberg expressed the opinion that shares should not be approved at a selling price of less than $170 and that recent sales were made at $200 per share. It was stated that the company buys gas from the Lynn Gas & Electric Company at 60 cents per thousand cu. ft. and resells it in Salem and Peabody at $1.

President Henry Hale of the Salem Company pointed out that the great fire of June, 1914, entailed a great debt on the company, which it is now desired to wipe out.

Capital of Illinois Company Increased to $20,000,000

The Central Illinois Light Company has certified to the secretary of state to an increase of capital stock from $5,500,000 to $20,000,000.

Enlargements of plants and the necessity of purchasing additional equipment to take care of increasing business made the issuing of additional stock necessary.

The Central Illinois Light Company succeeded the Peoria Gas & Electric Company. It owns electric light, gas, power and heat utilities and furnishes electric current to Pekin and other towns in the vicinity of Peoria, Ill.

Indiana Gas Association to Meet April 24-25

The annual meeting of the Indiana Gas Association will be held at the Claypool Hotel, Indianapolis, April 24-25. An interesting program has been arranged and will be carried out, as follows: President's Address, G. M. Dolley, Logansport, Ind.; "Be Careful First," illustrated by A. G. I. moving pictures, to be given by J. B. Douglas, claim agent, U. G. I. Company, Philadelphia; "Industrial Gas Business," R. A. Zeigler, Anderson, Ind.; "Water Heated by Gas," W. A. Barrett, Indianapolis, Ind.; "Gas vs. Electricity," C. N. Chubb, South Bend, Ind.; "Extending Mains into New Territory," W. H. Crawford, Hammond, Ind. On Tuesday evening, April 24, a banquet will be held at the Claypool Hotel.

Making Social Activities Show Business Results

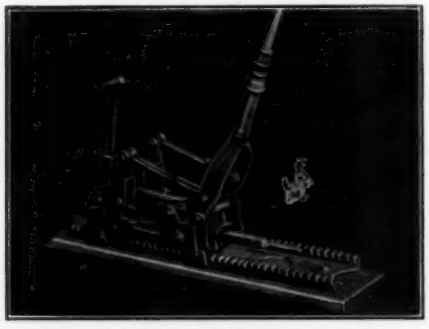
The Ladies' Aid Society of the Lafayette Reformed Church of Jersey City, N. J., devoted an afternoon to a cooking demonstration by the Public Service Gas Company. Mrs. Young and Miss Pawling, demonstrators, baked bread and biscuits and served chocolate and coffee. This demonstration resulted in the sale of the following:

1 No. 1864 New Process Range,
1 Waffle Iron,
17 Prospects for waffle irons.

A demonstration was held for the benefit of the Orphans' Home at Amsterdam Hall, West Hoboken, N. J. The gas and electric booth was presided over by Miss Pawling, Mrs. Young and Miss Isley, gas appliance demonstrators, and Miss Meister, electric appliance demonstrator. Tea, toast, coffee and waffles were served each night for a week. This demonstration resulted in the sale of the following:

1 Range,
1 Water Heater,
1 Waffle Iron,
1 Hot Spot Heater,
1 Electric Iron.

Two other successful demonstrations were held during the month, one at the Bergen Baptist Church, Jersey City, and the other at the First Reformed Church, Hoboken, N. J.



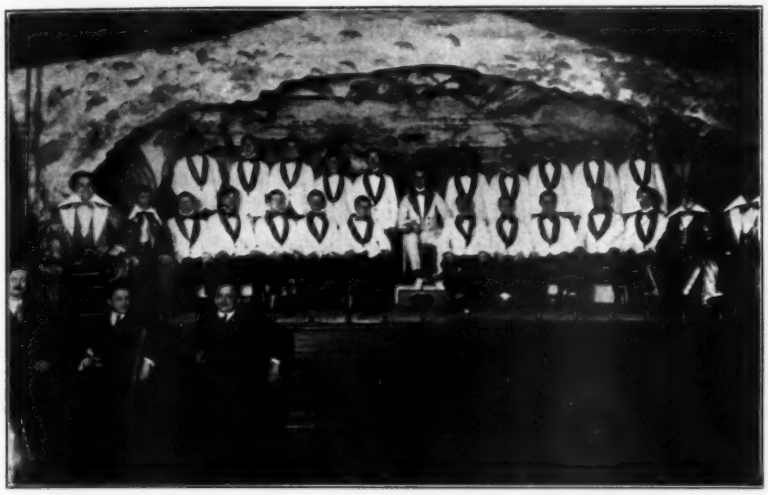
PIPE PUSHER USED FOR PUSHING PIPE UNDER PAVEMENTS, ROADS, ETC.

Pipe Pusher Saves Excavating

A simple method of pipe laying that has recently been brought to our attention is used to push piping under pavements, floors, streams and roads, and does away with much useless digging and trenching.

It is worked on the lever principle and, it is said, its rugged construction allows long lengths of pipe to be pushed considerable distances with accuracy enough to insure the pipe reaching the point desired.

The pusher, which is shown in the accompanying illustration, has been put on the market by the Easy Manufacturing Company at David City, Neb., and has since met with favor for the many jobs where excavating would entail considerable expense, time and trouble.



JERSEY CITY MINSTREL TROUPE COMPOSED ENTIRELY OF GAS COMPANY EMPLOYEES

Annual Minstrel Show at Jersey City Looks Promising

Active preparations have been begun for the coming third annual minstrel show and dance of the Public Service Minstrel Troupe, to be held in the Public Service auditorium, 84 Sip Avenue, Jersey City, Friday evening, March 16.

The troupe, which has an enviable record, is composed solely of employees in the Jersey City office of the Public Service Gas Company and Public Service Electric Company, and was organized three years ago by Frank Mitchell, at that time president of the Public Service Association. The idea met with such instant success that it was decided to make the show an annual affair, and under the guidance of A. Richard Lewis, president of the association year 1917, the minstrels are confident of setting a high-water mark for attendance and all that goes for excellence in production this year.

The rehearsals are being directed by Frank Deppisch, chairman of the entertainment committee, who boasts of a galaxy of song birds and men not to be seen or heard in years and is proud to state that "every singer is a soloist." The end men are all old-timers and give promise of much excellent comedy.

Some Increase Figures

The high cost of living has not neglected to include the Consolidated Gas Company of New York and its affiliated corporations in its toll of victims, according to a statement made by the company recently. Allied to the increased cost of production the company faces a problem in obtaining sufficient supplies of anthracite and bituminous coal. During the last year, it has been obliged to draw on its reserve supply. That condition, it is expected, will continue during the present year.

The tremendous increase in cost of production is indicated by the fact that for gas oil alone the company must pay $2,400,000 more this year than in previous years. Other increases in cost of materials are shown in the following table:

Wood alcohol, 50 per cent.; machine bolts, 90 per cent.; stove bolts, 157 per cent.; boiler coal, 53 per cent.; brass cocks for gas stoves, 153 per cent.; boiler grids for gas stoves, 40 per cent.; porcelain handles for gas stoves, 55 per cent.; safety matches, 34 per cent.; lubricating oils, 8 per cent.; automobile naphtha, 7 per cent.; oxide purifying material, 199 per cent.; padlocks for meters, 26 per cent.; gas holder paint, 14 per cent.; cast iron pipe, 38 per cent.; steel pipe, 169 per cent.; wood screws, 55 per cent.; typewriter ribbons, 24 per cent.

Increase in Gas Sales of Rutland Company

The gas department of the Rutland (Vt.) Railway, Light & Power Company reports increased sales in 1916 of 5.14 per cent. over the previous year. There was a gain in ranges of 112; water heaters, 164; in meters, 160. The sale of industrial gas was 3,679,900 cu. ft., an increase of 58.8 per cent. over 1915. One hundred and eighteen new services were installed.

Commission Upholds Rate Increase in Center of Gas District

The Public Service Commission of Pennsylvania, in an opinion by Commissioner Milton J. Brecht, has dismissed a complaint of residents of Shingle House, Potter County, against an increase in the minimum rate of the Potter Gas Company, in which he holds that proximity of a town to natural gas fields does not lessen necessarily the cost of furnishing the product.

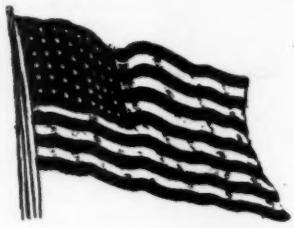
The gas company gave notice of intention to increase its minimum rate from fifty cents to $1.10, with a ten-cent rebate if paid within ten days from rendering of the bill. The complaint set forth that the town was in the midst of the gas district, and that fifty cents would be a sufficient minimum rate.

The opinion says that the company furnishes gas supplied through general distribution mains and not through short service pipes leading directly from gas wells. "Figures were given by the respondent to show that if it were to operate a plant exclusively for the borough of Shingle House, new pipes and a new compressor station being necessary for the purpose, the cost of service would be considerably higher than under its present system of supplying that service," says the decision.

Gas Stoves Increase in Massachusetts

As showing the steadily increasing use of gas stoves for domestic and industrial purposes, the figures presented in the forthcoming annual report of the Massachusetts Gas & Electric Light Commission will be of interest. The following are the returns for the years ending June 30, 1915, and the same date of 1916:

Company.	Gas Stoves, 1915.	Gas Stoves, 1916.
Adams	1,064	1,465
Arlington	5,342	6,080
Attleboro	1,500	1,600
Beverly	2,762	2,989
Brockton	10,784	10,232
Citizens', Quincy	4,119	4,339
Clinton	890	1,073
Dedham	2,663	2,347
East Boston	5,252	5,800
Fall River	30,500	32,354
Fitchburg	6,692	7,351
Framingham	1,689	1,821
Gardner	1,022	1,129
Gloucester	2,967	3,245
Greenfield	1,732	1,920
Haverhill	10,867	11,966
Lawrence	28,010	30,315
Leominster	1,861	1,945
Lowell	18,588	19,906
Lynn	47,266	49,279
Malden	15,890	16,761
Marlboro-Hudson	3,807	4,027
New Bedford	20,114	21,255
Newburyport	1,437	1,512
Newton	13,092	14,040
North Adams	3,409	4,107
Northampton	2,425	2,667
Norwood	1,024	1,138
Old Colony (Braintree)	2,941	3,285
Pittsfield	6,311	6,649
Plymouth	1,173	1,590
Salem	6,100	6,500
Springfield	25,835	27,199
Suburban (Revere)	7,590	7,895
Webster	3,206	3,690
Worcester	18,000	19,223



STAND BY THE PRESIDENT

¶ In this solemn hour, one of the most critical in the history of the Republic, we must rally to the support of our President.

¶ Let us show our patriotism by self-control. Let us put aside all personal feelings and not by word or deed embarrass the administration.

¶ We are no longer Republicans, Democrats, Socialists or of any creed or belief—we are Americans, one and all, heart and soul.

¶ Be loyal to those in authority over us. Do not indulge in criticism. Pray, believe, hope that war may be averted.

¶ "But whatever may follow the action that the President has taken, no one will charge that he or his country has been moved by aggressive thought. We covet no territory and ask no special privileges. The motives of other nations may be mixed. Ours are single. All that we ask is that the world shall be organized on a basis of equality of right and that the great muniments of right that mankind has raised shall not be overthrown."

¶ Let the Stars and Stripes be the rallying symbol now when America is put to the test—the test of calmness, of strength, of courage, of leadership.

"RALLY ROUND THE FLAG"

EFFECTIVE BOOKLET INSERT PRINTED IN RED, WHITE AND BLUE

Patriotic House Organ Insert

The above insert was printed on an attractive white paper in red and blue ink and carries with it a sentiment usually present during February, and is especially worth reproducing at this nationally critical moment.

It was inserted in the fly leaf of the Vulcan Bulletin issued by the William M. Crane Company, range and oven manufacturers, of New York City. This is typical of the live material which go into many house organs distributed in the gas field.

Exeter, N. H., Gas Meets Standard

The inspection on Feb. 2 of the gas manufactured by the Exeter Gas Light Company of Exeter, N. H., as presented by the Public Service Commission, showed the following results: Heating value, 634 B.t.u.; hydrogen sulphide, none; pressure, three inches. The standard heating value is 600 B.t.u.; standard pressure, not less than two inches; the variation shall not be over three inches. Such results characterize the tests which are taking place every day and show the stability of gas.

Illinois Commission Needs Gas Engineer—New York, an Inspector

The Illinois State Civil Service Commission has recently printed notices of an opening for a chief of the gas division of the Illinois Public Utilities Commission. The salary ranges from $2,700 to $4,000 a year and the work consists of general supervision of investigation of gas utilities in Illinois, preparing inventories and appraisals, handling complaints and recommending rates.

The position is open to any citizen of the United States whose application is filed in proper form by Mar. 31. Details and blanks can be obtained from the Illinois State Civil Service Commission, Springfield, Ill., or Room 602, 15 South Market Street, Chicago.

The Civil Service Commission of the State of New York requires an assistant inspector of gas, Public Service Commission, Second District. Men only. $1,080 to $1,200. The duties are to inspect and test gas for its purity and quality. Necessary traveling expenses will be paid in addition to the stated salary. Candidates must be graduates in chemistry or in chemical engineering, of a recognized college or university, or have an equivalent education. Subjects of examination and relative weights: General and theoretical chemistry, quantitative analysis, photometry, calorimetry and manufacture of gas, 6; education, experience and special training, 4. Open to non-residents. No sample questions.

Bills in Massachusetts Affecting Gas Companies

A bill recently introduced in the 1917 Massachusetts Legislature, providing for a valuation of the Boston Consolidated Gas Company's plant and that of the Boston Edison Company by a special commission, received scant support. The advocates were principally confined to the Dorchester Board of Trade, who proposed municipal ownership at a hearing of the lighting committee.

Counsel for the lighting companies pointed out that there is little public ownership sentiment generally, and that it would require about two years and the expenditure by the city of about $150,000 to make the valuation.

Massachusetts Commission Doings

Citizens of Wellesley, Mass., have petitioned the Massachusetts Gas & Electric Light Commission to direct the Newton & Watertown Gas Light Company to supply gas on Everett, Westerly and Pleasant Streets, Wellesley.

Worcester (Mass.) Company to Advance Prices

On Mar. 1 the Worcester (Mass.) Gas Light Company will abandon its flat rate schedule of 75 cents per 1,000 cu. ft. and inaugurate the following prices:

First 25,000 cu. ft., 85 cents net.
Next 25,000 cu. ft., 80 cents net.
Next 50,000 cu. ft., 75 cents net.
All over 100,000 cu. ft., 70 cents net.

The advance is the result of higher costs of coal, oil, miscellaneous materials and labor, the president, Dana D. Barnum, stated. Coal has increased 35 per cent. during the past few months, oil 78 per cent., miscellaneous materials 20 to 40 per cent., and labor 25 cents. It was stated that the increase in average monthly bills will amount to but 25 to 30 cents, while large industrial establishments will get their supply 5 cents cheaper.

The Worcester company is said to be the only one in Massachusetts having a flat rate. Its price was $1.50 in 1888. Its price of 75 cents was as low as any in the state.

Industrial Fuel Uses at Boston

The sale of more than 1,400,000 cu. ft. of gas for industrial fuel purposes by the Boston Consolidated Gas Company during the one month of January is a gauge of the large volume of gas now being used for various industrial processes in that city. Sales of appliances for the purpose amounted to about $6,000, while the average sales per month since July have been in the vicinity of $4,000.

A recent installation of this type is a 10 horsepower gas-fired steam boiler at the factory of the Princeton Confectionery Company. This boiler now heats the candy kettles, and a larger output is obtained than with the coal-heated kettles formerly used.

Another industrial use is a bottling establishment, where a 22-horsepower boiler will soon be installed. There are also a 12-horsepower and a 15-horsepower boiler for high pressure steam in two Boston establishments. The company expects to do a large and increasing boiler business the coming spring.

The Back Bay Hotel Victoria has been equipped with an all-gas kitchen, this being the first all-gas installation in a Boston hotel, although there are numerous clubs and other institutions with all-gas kitchens. At the Victoria all the coal ranges have been replaced by a three-section hotel range, large broilers and a toaster. There are excellent prospects that other Boston hotels will follow the lead of the Victoria, whose manager reports increased capacity and thorough satisfaction with the all-gas equipment.

As an aid to the securing of this kind of business, the Boston Consolidated Gas Company maintains on Girard Street, Boston, a model hotel kitchen laboratory, equipped with a regular kitchen range with all-hot top, and an old-fashioned burner range, besides broilers and toasters. Here any chefs, bakers or cooks that may be interested in cooking by gas are at liberty to bring roasts or any prepared dishes and cook them to their own satisfaction. This enables them to see for themselves the advantages and conveniences of gas cooking, and many contracts for gas installations have been secured as a result of the tryouts.

The industrial fuel department, of which W. W. Cummings is manager, has changed over three Boston newspapers from coal to gas type melting equipment and stereoplating machinery. Two of these printing plants will give the company a business of almost a million cubic feet of gas per month each. All the other Boston newspaper plants are good prospects, and the department expects to close with several of them soon.

During the year in which Mr. Cummings has been head of the industrial fuel department no gas heating equipment has come back into the company's hands. This is good evidence of the thorough satisfaction which this type of heating meets with.

As a means of following up the increases in sales of gas for the segregated rises, and of appliances of the various types, curves are plotted in the company's office which show these results month by month, and in comparison, the sales and output for the corresponding period of last year. The performance of the various salesmen in the industrial fuel department is likewise recorded, this being a stimulus to active efforts on their part.

Societies and Associations

THE PUBLIC SERVICE ASSOCIATION of Jersey City recently held a meeting at the Public Service Department, 84 Sip Avenue, Jersey City, at which the following officers were elected: A. Richard Lewis, president; Herbert Hammond, vice-president; Mr. Solleder, secretary; Mr. Baffa, treasurer.

THE NEW YORK SECTION of the ILLUMINATING ENGINEERING SOCIETY will hold a meeting Mar. 8 at the Auditorium of the Consolidated Gas Company, Irving Place and Fifteenth Street, New York, at which "Residence Lighting" will be the main topic of discussion. There will be two papers. H. H. Newman, agent of the Public Service Gas Company, Trenton, N. J., will speak on Maintenance, and Paul L. Zoellner, secretary of the Nichols Gas Fixture Manufacturing Company of Brooklyn, will discuss the Development of Lighting Fixtures. Following the formal meeting there will be music by the Gas Company Orchestra, whose members are employees in the meter department of the Standard Gas Light Company. There will be a display of lighting fixtures and the showrooms of the Consolidated Gas Company, the New York Edison Company and the Municipal Lighting Company will be opened for inspection. A table d'hote dinner will be served at Allaire's Chop House, Eighteenth Street and Third Avenue at 6 p. m. This is the eleventh season of this society's meetings in New York, and the attendance has broken all records, being well over 200 for the five meetings so far held.

Personal Notes

LUDWIG KEMPER, manager of the Minnesota Gas & Electric Company, has recently resigned his position to accept a position as general manager of the engineering department of Field Richards & Company of Cincinnati, Ohio. The resignation will go into effect April 1 of this year. Mr. Kemper has been with the Minnesota company for eleven and a half years, and the loss of his services will be deeply felt.

LUTHER GASTON, new business manager for the Knoxville Gas Company, operated by Henry L. Doherty & Company, has been appointed a member of the illuminating committee of the National Commercial Gas Association.

THE W. S. BARSTOW MANAGEMENT ASSOCIATION, recently incorporated, will supervise the management of all public utility properties controlled by the General Gas & Electric Company, the Eastern Power & Light Corporation and W. S. Barstow & Company, Inc.

J. H. HOOVER, manager of the commercial department of the Union Gas & Electric Company of Cincinnati, Ohio, was recently tendered a surprise dinner by the members of his department.

FRANK D. HANNUM, assistant foreman of the Gas Company of the Municipal Light Works at Springfield, Mass., has recently resigned his position. He had been with the gas department about ten years.

W. J. REILLY, one of the best known gas experts in Pittsburgh, died at his home, 4043 Lydia Street, Greenfield District, Pittsburgh, Pa., Feb. 11.

Construction Notes

Contracts for Industrial Gas in Pennsylvania

Industrial gas appliances have been installed for the Cameron Pump Works as follows: Two forges for tempering high-speed tool steel; one soft metal furnace with positive blast burner for melting Babbitt metal; two brass brazing furnaces. This company is considering the installation of eight 800 cp. Humphrey arc lamps. In addition, a 2-hp. gas fired boiler has been installed at the office of the Easton *Free Press* for stereotyping—all at Easton, Pa.

Kingston, Ont., Plant to be Improved

At a recent meeting of the Public Utilities Commission held in Kingston, Ont., it was decided to engage Frederick Burnett, chief engineer of the Economical Gas Apparatus Construction Company, Toronto, to prepare plans and specifications covering alterations and extensions in connection with the plant of the Kingston Light, Heat, Power & Water Department. If delivery dates are satisfactory, a new 300,000 or 350,000 cu. ft. holder will be erected and preliminary steps taken to obtain suitable property on the water front for the erection of coal gas equipment. The department is now making water gas exclusively.

Gas Installations on Pacific Coast

Western States Gas & Electric Company, Stockton division, California, has disposed of 206 sections of Hawk's Gas Radiation to the Holt Manufacturing Company, which is the largest similar installation on the Pacific Coast. This company has also installed a No. 50 Ruud automatic storage system complete with an 80-gallon insulated tank, which will use a large volume of gas. Two additional restaurants in Chinatown have installed complete gas equipment, which will produce a revenue of about $70 each per month.

75 Miles of New Main Part of Detroit's Program

Seventy-five miles of gas main lines will be constructed in the present year as a part of the most extensive program of service expansion ever undertaken by the Detroit City Gas Company, according to the company's general manager, Charles W. Bennett.

"We have been preparing for some time for the greatest program of service extension that we have ever undertaken, because the demands undoubtedly will be heavier than ever before," said Mr. Bennett. "The base of our work for the present year will be the construction of about 75 miles of main lines. This will not be in any one unified extension system, such as the water and sewer departments of the city government contemplate constructing in the newly annexed territory. Our main line construction work will be scattered all over the city.

"At the present time we are conducting an extensive pressure survey of the entire gas system in this city with the intention of devising ways and means of utilizing to greater advantage the supply of gas now provided. The pressure survey department is one of the most important elements of our business. It is maintained the year around for the purpose of using the supply of gas more efficiently. The work of this department is to find 'spots' in the city where there is more gas in the pipes than is being used and to tap such lines to feed other sections that are in need of the gas.

"There are two problems facing us in this year's work which are more or less common to each year's activities—materials and labor. We have taken every possible step to procure the necessary pipe, and feel that there will not be serious trouble in this respect. Labor is the big problem. Last year we employed on the average 3,000 men, and in the present year we expect to have to increase that number considerably. We have scoured the country for competent foremen and superintendents and good workers.

"In 1916 the gas company laid 73 miles of big lines, which was more than in any other city in the country, notwithstanding the fact that we had the material and labor problems to cope with. We are probably better prepared this year than ever before to care for the tremendous demands placed upon us by the phenomenal growth of the city. We have already contracted for considerable machinery, which will soon be installed to increase the efficiency and service of the company. Plans are already in progress enabling the company to successfully meet with the 1917 demand caused by increased home building activities."

New Gas Plant for Glass Company

Directors of the Fairfield Glass Company, Lancaster, O., in which Columbus men are interested heavily, have voted to install a $35,000 gas manufacturing plant. The turning off of the natural gas, due to the shortage, caused a shutdown of the plant for a month. Officers of the company are expecting to have the gas turned on soon temporarily, so that the plant may resume production. The artificial gas plant will be ready in the fall.

New 16-in.. Main in Oklahoma

The Lone Star Gas Company has begun to make a survey for a 16-in. gas main to be laid from Petrolia to Loco, Texas. In case the company finds that its own gas supply at Loco will not feed its line with sufficient supply of gas for Northern Texas cities it will extend the line to the Fox field, where three gas wells are making something like 200,000,000 cu. ft. of gas a day.

Half a Million for Cincinnati Company Improvements

Half a million dollars is to be spent in the near future for improvements to and extensions of the property of the Cincinnati Gas & Electric Company. This developed when reports were received from Columbus that the Cincinnati Gas & Electric Company had filed an application with the state public utilities commission for permission to issue $2,000,000 worth of bonds. It was explained that $1,500,000 of that amount would be used to retire the Cincinnati Edison Company bonds, to that amount, which fall due June 1; and that the other $500,000 would be used in improvements. "The amount contemplated for improvements is entirely separate from the half-million dollars which the Union Gas & Electric Company had planned to spend in enlarging its gas mains and improving its distribution system," stated President W. W. Freeman of the Union company. "The latter amount we had planned to spend as soon as an adjustment of the gas rate question was finally made."

Ready to Place Demonstration Lights in North Adams, Mass.

Manager Ben. K. Cook of the North Adams Gas Light Company has stated that his company was ready to place the experimental double line of new lamps on Main Street if the city officials would interpose no objections.

An appropriation for the double line of lamps on Main Street and for a double line on State and Eagle Streets, with a lamp on every other pole on these streets, has been requested by Mayor Whitaker.

The Merchants' Association has thought that it would be well if the North Adams Gas Light Company should hang an experimental double line of lamps between Bank and Eagle Streets, on Main Stret, so that the city council members could see what improvement it would be. It is understood certain members of the council would like to see what the improvement would mean before they vote for the extra appropriation.

Manager Cook declares he is now ready if the city will have no objection.

It is not understood that Commissioner Temple will object. He was asked about the matter by Manager Cook and at that time thought it might be better for the gas company to go and carry out the previous understanding, and hang the lamps in number and place just as the old ones were.

But then the commissioner did not understand that the proposed hanging of the lamps on Main Street was meant as a temporary demonstration and that the city would not be held responsible in any way for its cost.

When it is made clear to the commissioner that the cost will be nothing to the city it is fully expected that he will readily agree to the demonstration being made.

Installations at Weymouth, Mass.

A new Rector heating system, heated by gas, has been installed in the store of Edward Merchant, Broad Street, East Weymouth. This system is made by the General Fire Extinguisher Company of Providence, and is considered one of the most scientific heating systems of modern times.

High speed steel gas fired furnaces are to be installed at the Crawford Machine Works, North Weymouth, Mass., in the near future.